

INTRODUCTION

The Director's Advisory Committee on Forecast Operations (DACFO) is a group of twelve operational, non-supervisory personnel who serve in an advisory role to the Assistant Administrator for Weather Services (AA). Each autumn, the DACFO goes directly to field personnel to solicit recommendations on how to solve operational problems of a technical nature. The committee reviews each item, and the best of the best of the recommendations are carried directly to the attention of NWS Headquarters (WSH) and National Centers for Environmental Prediction (NCEP) management at the annual meeting. Dan Samelson, the DACFO Chairperson, prepared the 1999 DACFO Meeting Summary which is included in this report. More detailed, formal documentation of the meeting discussions are placed in the Recommendations and Responses section. Since August 13, 1999, this report has appeared on the World Wide Web in draft form. Any changes, deletions, or additions that have been made after that date are logged in the Dated Log of Entries to the Report section.

To view this report electronically, you need to use Adobe Acrobat software. We encourage you to use the "bookmark" feature on the left side of the screen. It contains links to all the major sections of the report in the Table of Contents. All blue-colored text items in this report are linked to the appropriate part of the report.

Questions? Call Gody Rivera at NWS HQ, Office of Meteorology (or its current/new name), Customer Service (or its current name) at (301) 713-0090 x110; or electronic mail: Gaudencio.Rivera@noaa.gov; or fax to (301) 713-1598.

Note: As you know, NWS HQ is presently restructuring and it is on a somewhat fast track based on all indications up and down the chain. Try not to be surprised to find out that OM or any of the HQ office/division/branch has been renamed when you've had a chance to read this in the next fiscal year.

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DATED LOG OF ENTRIES TO THE REPORT

The initial posting of this report in draft form was August 13, 1999. Subsequent changes will be logged below.

1999 DACFO Meeting Summary

Memorandum for: John J. Kelly, Jr.
Assistant Administrator for Weather Services

From: Dan Samelson
1999 DACFO Chair

Subject: Director's Advisory Committee on Forecast Operations
April 1999 Meeting Summary

This year's meeting was an intensely rewarding experience for DACFO members. We engaged many Headquarters groups in animated dialogue. Some of those discussions were very satisfying, some left us positively encouraged by the potential for significant developments, and others revealed opportunities which will undoubtedly be lost if not acted upon in a timely fashion. And, as is typical of any organization of this size, we also were made aware of less than positive situations.

Successes

There were three items that provided a great deal of satisfactions to the DACFO, confirming the effectiveness of the process.

- A suggestion to modernize the National Weather Service Location Identifier program, made just a few years ago, has resulted in a remarkable webpage with database and request form. Extremely simple instructions are available to anyone who wishes to initiate the process of adding new locations, or to request changes to existing identifiers.
- A 1998 proposal to make all WSOM chapters, OMLs, and ROMLs available electronically has resulted in a webpage, complete with search option, undergoing final testing this year.
- A 1999 suggestion to make office URL addresses easier for the public to find will be accomplished this year with a Headquarters-based server.

Encouraging Developments

The DACFO was encouraged by the AWIPS Build 5 process, especially the role of the field in winnowing down the hundreds of suggestions submitted. Nearly 25% of all DACFO proposals this year were AWIPS related. Although the final resolution of our recommendations will not be known until summer, we know they will be seriously considered, the field was actively involved, and the Build 5 series will improve AWIPS.

At a Cusp

The Weather Service has reached a cusp. With AWIPS installation nearly complete, the time to change focus has arrived. There is nothing worse than saying ...“if we had only started this a few months ago...”, because the DACFO believes it is now “a few months ago.”

After operational testing and evaluation have been successfully completed, and demonstrated stability of AWIPS has been achieved, it will be time to unleash WFO programmers, and help them produce software to further enhance AWIPS capabilities. An integrated approach to software development is needed. This may take the form of

- “how to” support at Headquarters,
- a software library or clearinghouse at Headquarters,
- varying degrees of support in tailoring software to specific locations, or
- a combination of all three concepts.

The Techniques Development Lab (TDL) group in this area has a staff of four. They cannot do this job alone, nor can Regional offices where staffing is already spread thin. The DACFO requests the Director’s support in reallocating resources. Authorization of personnel shifts and increased funding would be invaluable. TDL has offered to develop proposals for this project, and each idea will be prefaced with “if the resources are available.” Positive consideration in this matter will help realize full AWIPS potential.

Cause for Concern

Finally, we once again ran up against the ongoing problem of improvements to ASOS. We are troubled by what we perceive as a loss of options by the ASOS group at Headquarters. Procurement and testing of all-weather rain gauges and snow measuring devices seems to be trapped in an interminable process, especially when promising instruments fail the testing phase.

There are legal restrictions on obtaining instruments, which further inhibits the procurement and testing, and ultimately the implementation process. This is especially frustrating since WMO standards for some of these instruments exceed our own standards. This means suitable instruments are already in the field outside this country. We encourage the Director, on his upcoming trip to Switzerland, to find out what WMO members are using, and see if their successes can be utilized in our efforts to improve ASOS.

Concluding Comments

The committee was assigned several action items to work on during the meeting, concerning a new format for the Operations Manual, our view of what the field requires from NCEP, and what we believe to be the role of the HMT in office operations. Attached to this summary are the formal responses.

In conclusion, we recognize that the DACFO continues to experience success because the Director of the Weather Service supports his advisory committee, and has made that support known to everyone at Headquarters. With that continued support we have confidence that the year 2000 DACFO cycle will continue to positively improve field operations.

ATTACHMENT TO SUMMARY REPORT

From: Director's Advisory Committee on Forecast Operations (DACFO)

Action Item: Changing the Weather Service Operations Manual (WSOM)

At the April 1999 DACFO meeting Jack Kelly requested his advisory committee to consider the WSOM and determine whether the current format and content need changing. After discussions with representatives of the Office of Meteorology, the following was endorsed by the committee:

The WSOM should be divided into three general sections

- *Legal language and definitions covering all chapters*
- *Short policy statement for each chapter. These statements should be enduring; written so that updates would be infrequent. They would be signed off by the Director of the Weather Service.*
- *General procedures for each chapter. These would contain many examples and serve as the operational field forecaster's ready reference guide. They would be signed off by Section Chiefs.*

Forecasters are familiar with most of the definitions and general policy behind specific products and programs covered in the WSOM. They are also knowledgeable about format and content. Problems arise when uncommon events are anticipated, when the first event of a given season is expected, or even when events are encountered in a seasonal drill. These are the circumstances when the WSOM is most likely to be consulted. The proposed format would increase the efficiency of field forecasters looking for examples, by eliminating the need to thumb through reams of legal definitions and policy statements.

ATTACHMENT TO SUMMARY REPORT

From: The Director's Advisory Committee on Forecast Operations (DACFO)

Action Item: How Can NCEP help field forecasters do their job?

At the April 1999 DACFO meeting Jack Kelly requested his advisory committee to consider NCEP and how it could best help the field forecasters do their job. After meeting with various NCEP divisions and considering the problem, NCEP was divided into a modeling section, specializing in the development of models and their output, and an operations section, specializing in adding value to model output. Examples of operations section output are high seas forecasting and 3-5 day manual graphics, temperature and precipitation forecasts.

It was agreed that NCEP can help field forecasters in the following ways:

Modeling section

Provide a booklet or electronic equivalent with timely updates which briefly describes all products produced by models. This would be reminiscent of the book Peter Chaston produced at the National Weather Service Training Center.

Focus on improving model initialization. Give greater weight to surface observations already available, and enhance vertical consistency.

Reallocate funds to continue improving computer resources.

Operations section

Provide the field with manual products that can serve as guidance, or as a first guess or framework for field forecasters. Keep providing the field with specialized expert interpretation.

Maintain forecast responsibility for areas where no one else forecasts (e.g.; high seas).

ATTACHMENT TO SUMMARY REPORT

From: Director's Advisory Committee on Forecast Operations (DACFO)

Action Item: What should be the role of the HMT?

At the April 1999 DACFO meeting Jack Kelly requested his advisory committee to consider the role of the HMT in office operations. This was a question concerning a potential change in working conditions and position description, which is normally outside the realm of the DACFO. Such items are officially handled by The National Weather Service Employee Organization in negotiations with National Weather Service management. In fact, field suggestions must go through the union in order to be considered. Solicitation of the field for ideas by management may be judged to be an unfair labor practice.

Members of the DACFO are serving the Director in an advisory capacity. It must be made clear that the members are all from the field and represent the field with respect to individual suggestions or recommendations which are transmitted through them as part of the DACFO process. But, when asked about an issue involving working conditions and position descriptions, we are no longer representing the field, but, rather, supplying an opinion developed from our field experience. We are providing another perspective of a much talked about issue, but we are not pretending to negotiate the issue, nor are we pretending to represent any group. The intent is to add to the pool of information. Our hope is that when the issue actually comes to the table for negotiation, our input will help all parties involved come to an agreement worthy of this agency.

The role of the HMT

There exists today, and should always exist, a real need for the HMT in the fabric of the NWS. The role of the HMT is inextricably interrelated with the roles of general and lead forecasters, as well as with the roles of the management team. It is incumbent upon each manager and management team to ensure that each HMT is treated as a vital, respected member of the office. It is also incumbent upon each manager and management team to ensure that resources are made available to accomplish the integration of the HMT into the office team. This includes an environment where HMTs receive the time, support, and training needed to accomplish their duties and responsibilities. And it also includes the familiarization and training of forecasters and management team members in the traditional duties of the HMTs. Increased expectations for the HMTs must be accompanied with increased expectations for forecasters and management team members.

It is the opinion of the DACFO that a three-pronged approach is needed:

- **The management team members involved with operations at all field offices must be able to do the jobs of the people they supervise. This means they all must be able to work operational desks: the DAPM must be able to work the HMT desk; the MIC, SOO, and WCM must be able to work all forecast desks and be able to perform traditional aspects of the HMT desk (e.g; upper air, data entry, public service). And the only way to ensure competence on a desk is through familiarization, training, and operational shifts.**
- **New employees in an office, whether interns, HMTs, or forecasters, should be expected to master three or four skills outside the traditional position description. This will allow them to either fill in for someone directly, for either part or all of a shift, or at least assist in some of the shift duties. The filling in should not be arbitrary or capricious, but should be done to allow someone else to perform some other duty for the good of the office.**
- **Present employees should be strongly encouraged to develop skills in other areas so they may fill in or help out when the need arises. The increase in office effectiveness when cross-utilization occurs should be a strong motivating factor to develop these additional skills.**

1999

RECOMMENDATIONS

AND

RESPONSES

MANAGEMENT AND BUDGET

MANAGEMENT AND ORGANIZATION BRANCH (MB3)

Policy - Follow-Up Item

F1. WSOM/OML/ROML Dissemination

DISCUSSION: The current method of distributing WSOM chapters, ROMLs and OMLs is outdated and, in the case where operations personnel are not properly notified of additions, potentially dangerous. With the advent of new high speed/high capacity data transmission and storage systems coinciding with the AWIPS era, an alternative to paper updates would be a timely change.

RECOMMENDATION: Utilize new technology to support an NWS electronic OML/ROML reference database as a core feature of an NWS-wide, computer-based reference/support/training system. An example of this technology would be the Raid system for use with optical read-write disks. The system should be capable of auto updates, indexing, and verification of receipt, as well as the capability of interfacing with AWIPS. The system should also form the backbone of an administrative archive system to meet National Archives and Records Agency (NARA) regulations. Once implementation has been completed, paper versions of WSOM chapters, ROMLs and OMLs should be phased out.

RESPONSE 1998: The current method of distributing directives, except for unusually large documents, takes 3 to 5 days from print to field receipt. From a distribution standpoint, this certainly is acceptable. An electronic system will cut this time substantially. However, other delays occur during the composition, clearance, and signature stages, and this would not be likely to change with the implementation of the new electronic system. Nonetheless, this conversion to new technology is proceeding favorably. The test and demonstration stages have been very positive. The statement that the directives should meet NARA regulations is a welcomed goal. It should also be noted that procedures can be smoothed out by program staff submitting directives through the system with adequate clearance and processing time.

UPDATE, NOVEMBER 1998: We plan to contract this work to a vendor during January 1999. Current plans are to implement a Web-based WSOM.

FOLLOW-UP 1999: The master set of WSOM documents (parts A through J) has been scanned and posted to the pilot WSOM Web site. DACFO members were sent a status of the WSOM Web site on March 22, 1999, and were requested to provide regional ROML Web site URLs. The site was demonstrated to DACFO members on April 27 and their review and feedback have been incorporated in the project. Due to some file incompatibility issues, the

release date was moved one month to June 30, 1999. Like many Web sites, further adjustments will be made based on user feedback.

Policies and procedures for submitting electronic chapters and OMLs will be provided in a revised WSOM Chapter A-01 upon release of the WSOM Web site to the field. Access to the WSOM Web site is accomplished through Web browser software and does not require any application client. This will accommodate access by AWIPS workstations. A sophisticated search engine will assist users. The WSOM Web site will also provide links to the regional ROML Web sites.

UPDATE OF FOLLOW-UP 1999: An “All NWS Employees” message was sent to the NWS Bulletin Board on July 20, 1999, announcing that the website, “ <http://tgs6.nws.noaa.gov/wsom/> “ is now available via the Internet for use by all NWS employees. **CLOSED (Joseph Smith).**

OFFICE OF METEOROLOGY

CUSTOMER SERVICE CORE (OM11)

Data Review Group - New Item

1. Change Notices - Add WMO Headers

RECOMMENDATION: Currently, the SMCADADRG AFOS product...change notices...give us the new AFOS PILs. With AWIPS now coming online, I suggest that this product also contain the WMO header info so the localization files on AWIPS can be modified. AWIPS needs the WMO headers for these database changes.

RESPONSE 1999: The Change Management, DRG Committee Chair, and the NWS Program Manager agreed to include WMO Headers for every AFOS PIL or Product that goes out to all customers and users of NWS products over the AFOS and NWS. Currently, and at least in the time even before this recommendation came to the attention of the DACFO, WMO headers have been included on all AWIPS Change Notices. This practice will continue for as long as AFOS or AWIPS Change Notices are sent over the circuits destined for NWS internal and external users of NWS products. **CLOSED (Gody Rivera).**

Communications - New Item

2. UGC Zones and Proper Distribution of the Product

DISCUSSION: In the early 1990s, the NWS downsized the zones with the intention to allow for properly distributed, more accurate and faster updates of UGC zone products. While the NWS has the capability of providing more accurate zone/point specific forecasts, they are not reaching all of the intended audience.

The Weather Channel (TWC) is arguably our most visible method of visual display of our product. Unfortunately, cable companies elect not to or cannot afford to have enough “head ends” to properly distribute the zones to the intended audience. A study has been accomplished in our county warning area which indicated up to 15 percent of our population receives the incorrect zone forecast. For instance, I live in a coastal zone but my cable company is based 10 miles inland and uses the inland zone for its entire service area. Therefore, if the office does as the downsized zone program intended, a vulnerable coastal zone would NOT receive coastal flood warnings, etc., because the UGC coding for those zones would not be accepted for distribution by TWC cable distributor. As another example, one of our forecasters receives a zone from another state, at least 30 miles from his home.

This distribution problem is not limited merely to The Weather Channel. Radio stations with at least a 40-mile radius of coverage probably can cover 5 or more zones. This creates a problem in determining which zone should be broadcast.

At the Taunton office, we circumvent this problem by overlapping the nearby inland zones to cover deficiencies uncovered in our study. Although this assures the information gets to the appropriate audience, it hints at another problem: the downsized zones are probably in some cases too small to be of value, since some of us commute 25 or more miles and can travel through 5 zones to get to work.

RECOMMENDATION: (a) Encourage TWC to resolve proper distribution of our zone product. (b) In the interim, recommend NWS work with TWC and use their own resources to survey each CWA to see where improper distribution exists and then mandate that zones be packaged in larger groups to ensure proper distribution of the message. This will probably require references to urban centers/coastal regions for temperatures/precipitation/wind. (c) The larger packaging will actually be a benefit to commuters, creating a more accurate picture of what to expect and would resolve the too restricted zone information for radio station broadcast purposes.

RESPONSE 1999: It is not appropriate for the NWS to ask TWC to use their resources to survey NWS offices to resolve zone forecast distribution problems. The action to identify any such problems and proposed solutions resides at the field office level on a case-by-case basis. Local offices should work with their cable facilities to ensure the best distribution of forecast information.

Local offices may consider the following options for better distribution of zone forecasts: (1) regrouping certain zones in a manner that accounts for population and media distribution capabilities; (2) use of separate local-type forecasts for certain metropolitan or other areas; and (3) zone reconfigurations to eliminate partial county zones, e.g., combining the inland and coastal sections of a county zone.

Options 2 and 3 require coordination and approval by regional and WSH levels. Local offices would have to decide whether the possible benefits of any option outweighs any resultant problems, including loss of flexibility in providing needed specificity in other products using zones. **CLOSED (Rod Becker).**

Verification - New Item

3. Verification of Overnight Minimum Temperatures

DISCUSSION: Minimum temperature verification is normally accomplished by using 12Z and 18Z ASOS observations and looking at the “2” group to determine the 6-hour minima. The hourly temperature observations through 8:00 AM local time (Central time zone) are then used to determine the overnight low temperature for verification purposes. Occasionally, a front will pass through during the morning hours that causes the minimum at 18Z to be a mid-morning minimum rather than an overnight low.

RECOMMENDATION: The proliferation of the Automated Surface Observing System (ASOS) gives an opportunity to provide the data needed for minimum temperature verification. ASOS programmers should have the system record an *overnight low*, valid 01Z to 8:00 AM local time. The data need not be transmitted, only stored in the "Daily Summary" information. Forecast Offices can access any ASOS within their forecast area via modem to view the Daily Summary page and retrieve a true overnight low when the 18Z minimum might be ambiguous.

RESPONSE 1999: ASOS Build 2.6 will fulfill this request by adding an “overnight minimum temperature” to the Daily Summary Message (DSM). The Build 2.6 software will define overnight minimum as the minimum temperature that occurs between 7 p.m. and 8 a.m. Local Standard Time (LST). That 7 p.m. to 8 a.m. LST time window is consistent with the definition of overnight minimum temperature which has been used by ASOS and AWIPS (Build 4.2) national verification software since the mid-1980's. While the 12Z and 18Z 6-hour minima are used in the algorithm that computes the overnight minimum, the overnight minimum is defined in terms of local, not UTC, time. **Closed (Paul Polger).**

Editor's Note: It was suggested at the meeting that 8 a.m. LST is not a late enough time to end the overnight minimum time window since some sites in the western parts of time zones during mid-winter often experience the overnight minimum temperatures between 8 a.m. and 9 a.m. LST due to a late sunrise. Therefore, OM might want to consider changing the end-time of the overnight minimum window to 9 a.m. LST. After the meeting, Chuck Kluepfel and Dan Samelson, the DACFO Chair, agreed that a “fix” of this nature would create other unintended problems. Early morning cold frontal passages after the overnight low has occurred could result in a second “minimum” occurring between 8 a.m. and 9 a.m. LST, and in those instances the second “minimum” would incorrectly be recorded as the overnight minimum. Depending upon the intensity of the cold front, such errors could be substantial and would occur at any time of year at any verification site in the country. The problem with the 8 a.m. “end time” is limited to the winter months at a limited number of sites. Therefore, OM and the DACFO agree that the time window which has been in place for 15 years should not be changed nationally. If the forecaster believes that the verification software for a particular day incorrectly calculated the observed minimum temperature, he/she should use the AWIPS Verification Editor to edit the database. The forecaster has 5 days to make this change before the data are transmitted to the NOAA Central Computer Facility in Suitland, Maryland, for national verification archival.

Verification - Follow-Up Items

F1. Create a User-defined AWIPS Report Filter/Automatic LSR Generator

DISCUSSION: When final stage staffing is reached at offices around the country, quality and production of products essentially will depend on one or two people. They will be expected to handle public and aviation products, as well as a myriad of other products which provide ongoing information to the public and other users. A concerted effort to automate many of these products would aid greatly in controlling the office workload.

RECOMMENDATION: Create a user-defined AWIPS report filter and automatic local storm report generator. The software could satisfy several needs: (a) create preliminary LSR for forecaster review, (b) provide input to verification schemes, (c) metwatch tool—provides tone or message alerting based on user thresholds, and (d) serve as an event report archive.

RESPONSE 1998: In response to the staffing issue, the quality and production of products should never just depend upon one person since there will always be at least one meteorologist and one HMT on duty at a WFO. Concerning the AWIPS report filter/automatic LSR generator, AWIPS requirements do exist for (1) tone and message alerting, and (2) an LSR generator that serves as an event archive and “first guess” entry for Storm Data. These upgrades are scheduled for beyond Build 6.

FOLLOW-UP 1999: This recommendation was included as part of the AWIPS Build 5.x prioritization process. **(Paul Polger).**

FOLLOW-UP DECEMBER 1999: Items a), b), and d) above are scheduled to appear in Build 5.1 in January 2001. Items c) requires more detail.

F2. Real-Time Forecast Error Fields

DISCUSSION: In terms of forecast max/min temperatures and probability of precipitation, improvement over guidance could be more easily realized if forecasters could track MOS errors from day to day. For instance, if model guidance had a warm or cold bias with a particular pattern, this could be quickly assessed.

RECOMMENDATION: Field forecasts should have real-time access to error fields, particularly graphics showing MOS temp/POP errors for previous model runs.

RESPONSE 1997: This is definitely an AWIPS requirement and will be addressed in a future AWIPS build. OM and TDL personnel are currently meeting regularly to clarify all AWIPS verification issues and requirements. Once all issues and requirements have been clarified, the coding of the software will begin.

FOLLOW-UP 1998: This is definitely an AWIPS requirement, and we will work hard to include it in Build 5.

FOLLOW-UP 1999: The local application program SOOVER, developed at WFO Tulsa, fully meets this request. The development of a more comprehensive “Daily Forecast Critique” which will include real-time forecast and guidance feedback on aviation elements is planned for AWIPS and is tentatively scheduled to be complete in Build 5.2. **CLOSED (Paul Polger).**

Emergency Management - Follow-Up Item

F3. Develop Regulations for Working with Emergency Managers

DISCUSSION: Much of the WCM's time is spent working with local and state emergency managers, yet no regulations exists to describe these relationships.

Also, FEMA has included the NWS as an agency in the Federal Response Plan and NOAA Weather Radio is supposed to be part of an “all hazards” warning system. Yet, WSH has not provided any guidance on the specific roles the agency plays during non-weather emergencies (HAZMAT or nuclear incidents).

RECOMMENDATIONS:

- (a) Create a new WSOM chapter (in section D) in support of HAZMAT (formerly D-07) and nuclear incidents (formerly C-48).
- (b) Create a new WSOM chapter support Emergency Services Agencies. Include the section from C-64 on FEMA support (attack warnings) and the OML from C-66 on agreements for disseminating non-weather emergency information and E-32 (Office of Emergency Planning and Red Cross)—if it is still valid.
- (c) WCMs should be asked to volunteer to develop these changes.
- (d) Combine the above suggestions (a) and (b) and place them in C-49 as an all encompassing revision. Target - September 30, 1999 (Don Wernly).

RESPONSE 1998: OM will review existing WSOM chapters on HAZMAT support and will draft a replacement chapter (C-49). Since 1993, the OM policy has been to involve field WCMs in the development of operations chapters, and budget permitting, OM plans to continue this integrated approach. Responsibility will be shared between OM11 and OM12. Appendix A of the WCM Job Aid (updated October 1998) provides interim guidance prior to the issuance of C-49.

FOLLOW-UP 1999: OM will involve field WCMs to draft a replacement Chapter C-49 most likely combining recommendations (a) and (b).

FOLLOW-UP January 31, 2000: An updated Chapter C-49 was signed just a couple of weeks ago in mid-December 1999, and it covers the relationship with Emergency Management.

(Action Officer - John Ogren). Update of Chapter D-6, Fire Weather Services Program will not be completed until months from now, possibly during the period between September 2000 and January 2001. **(Action Officer - Paul Stokols).**

OFFICE OF METEOROLOGY
INTEGRATED HYDROMETEOROLOGICAL
SERVICES CORE (OM12)

Severe Weather - New Items

1. Media Confusion Between the SEV and SLS

DISCUSSION: SPC sends out a redefining statement (SEV) for Severe Thunderstorm and Tornado Watches. Then the WSFO sends out a redefining statement (SLS), which may not be the same as the SPC issuance. The difference has caused confusion with the media. While the SEV is historically an internal product, in the age of the Internet NOTHING is truly internal anymore.

RECOMMENDATION: SPC should send out the only redefining statement after coordination with the NWSFO; or the NWSFO should send out only the redefining statement. In other words, only one of them (SPC or NWSFO) should send the redefining statement, not both in the same format.

RESPONSE 1999: There are ongoing efforts to provide the SEV (the revised version will be referred to as SEV') as an internal-only product targeted to WFOs. Mary DesJardins (NCEP) and Ward Seguin (TDL) are working to generate the internal-only routing. Testing of the SEV on SPC's N-AWIPS and local WFO AWIPS workstations is scheduled for July 1999. In March 2000, SPC is scheduled to discontinue issuance of the SEV, with the SEV issued operationally for AWIPS and internal coordination purposes.

The committee, in person, suggested allowing local offices issue the SLS/WCN first, and then issuing the SEV. This does not fully address the need for the issuance of the local counties included, since some media members derive the counties from drawing the coordinates listed in the SAW ('Aviation watch'). Local offices need to issue their redefining statements quickly to avoid confusion with what the SAW graphic depiction suggests. Should the SAW issuance be delayed, so coordination can occur via conference call with SPC outlining the proposed watch coordinates, and give local offices a few minutes to work on the county definitions before the SAW is issued? **Target March 31, 2000 (Mike Matthews).**

DACFO ACTION: Answer question.

2. Usage of "Warning" and "Advisory" in Forecasts

DISCUSSION: There continues to be a large amount of confusion (occurred at past 3 offices worked) surrounding the most suitable product to issue for gusty winds not verifying high wind criteria. Local policy greatly adds confusion to the Lead/General Forecaster decision process, by directing that a high wind warning be issued in lieu of a wind advisory whenever even localized reports of damage are received or thought to be possible during the forecast event.

We are becoming too wary of legal repercussions if damage occurs and we don't have the word warning in any of our products for the event. We all know that an accurately written wind advisory with the mention of isolated higher gusts and expected light damage to trees/power lines is much more accurate and useful to the public for sustained wind events of 25-35 mph with occasional gusts to 50 mph, rather than always falling back to a high wind warning. It's easy for a forecaster to always issue a high wind warning to cover or pat ourselves on the back when we verify it with one or two downed trees in a county. But is it practical and a public service?

RECOMMENDATION: There needs to be some National clarification that states or lists the expected/related damage that verifies the high wind warning and wind advisory. This is imperative if the wind advisory is going to be a product of any worth to the public and NWS.

RESPONSE 1999: Chapter C-44 lists the high wind warning criteria as either sustained winds of 40 mph or greater lasting one hour or longer, or winds of 58 mph or greater for any duration. An advisory is issued under the guidelines of sustained winds exceeding 25 mph (up to warning criteria). There are regions that issue a 'lake wind advisory' for the 25 mph criteria. The Chapter states in section 6.3.1(warnings) and 6.3.2 (advisories) to include the following information in both products:

- area and time affected
- potential wind speeds, ...worst conditions, general impact, etc.
- reasons for the warning or advisory
- definition of the warning or advisory
- calls to action

If the local definition of the advisory or warning is included in the product as stated in the Chapter guidelines, then there should not be confusion on the part of the media or other customers. If a forecaster discusses the expected impacts in their advisories and/or warnings, then the best public service is performed. Specific national damage criteria should not be used since there is variable damage at the same wind speed due to different vegetation, soil and moisture conditions. **CLOSED (Mike Matthews).**

3. Winds—35G50 kts

DISCUSSION: The criterion for issuing and/or verifying a high wind warning is 35G50 kts. However, in this area it is common for a station to report 35G42 kts or 37G45 kts. No damage is done, yet the sustained wind would require a high wind warning. After 20 years or more forecasting in this area and developing a program for forecasting peak wind gusts, I have come to the conclusion that the steady wind, when not gusting to 50 kts or more, should be eliminated as

high wind warning criteria. The criterion should be the gust equaling or exceeding 50 kts, not the steady wind. It is wind gusts over 50 kts or sustained winds over 50 kts that can potentially cause damage. And damage is what our warning criteria are supposed to address.

RECOMMENDATION: Drop the 35 knot or greater sustained wind criterion for the issuance and/or verification of high wind warnings. The new criterion should be based just upon *wind gusts* of 50 knots or more.

RESPONSE 1999: The Chapter C-44 guidance allows local and regionally coordinated definitions of these criteria, so a proposed change should be coordinated on these levels. The emphasis of verifying just one forecast area above reinforces the local nature of this issue.

CLOSED (Mike Matthews).

4. Combining Severe Thunderstorm and Special Marine Warnings

DISCUSSION: In the past, an office along the coast (Gulf or Atlantic) could issue a combined Severe Thunderstorm/Special Marine Warning whenever a severe thunderstorm was expected to affect both land and marine areas. This option was discontinued several years ago, and currently two separate warnings have to be issued.

This is very time consuming.

A good example of this problem is in the Florida Keys where the majority of the severe weather is over water. However, if a severe thunderstorm is heading for one of the islands, two warnings have to be issued...SPECIAL MARINE WARNING (for the water) and SEVERE THUNDERSTORM (for the affected island).

If a severe thunderstorm over land for which a warning has been issued moves offshore, a special marine warning then has to be issued. This implies a lessened threat of severe weather as 35 knots is the threshold for special marine warnings.

RECOMMENDATION: Let offices near the coast issue combined severe thunderstorm/special marine warnings.

RESPONSE 1999: Most coastal WFO warning areas extend beyond NWR coverage, therefore many mariners rely on U.S. Coast Guard (USCG) broadcasts for marine safety information. The USCG needs a product that is easily identifiable as a marine warning. The combined warnings were issued with the words "Special Marine Warning" listed second, making it less likely to be noticed by rip-and-read USCG offices. Additionally, the SVR code was used for both the stand-alone Severe Thunderstorm Warnings and the combined warning, which did not allow for USCG automated systems to distinguish the difference. Therefore, these warnings were not getting to mariners who were beyond NWR range, or were not using NWR. While separate products will continue to be required, OM is working with AWIPS personnel to ensure WarnGen

will be able to generate both products when area to be warned spans both coastal counties and marine zones. **CLOSED (Laura Cook).**

Severe Weather - Follow-Up Items

F1. Reporting and Verifying Severe Events and Its Implications

Editor's Note: This item is a condensation of nine items that appeared in the 1997 report.

DISCUSSION: With the implementation of the WSR-88D, the number of severe thunderstorm and tornado warnings have increased dramatically. With the increased emphasis on verification, some warnings are verified by reports such as “dime-sized hail,” “tree limbs down,” “spotter reports 60 mile an hour wind gust,” or “spotter reports brief tornado touchdown with no damage.”

RECOMMENDATION: Reexamine the criteria used for defining and verifying severe thunderstorms.

RESPONSE 1997: The Office of Meteorology (OM) agrees that a full-scale review of severe thunderstorm criteria is warranted. OM will facilitate a working group of field and Regional meteorologists, along with representatives from the scientific community, to arrive at reasonable alternative criteria. The recommendations expressed by DACFO will be considered, i.e., raising the hail size and thunderstorm wind threshold, and adopting multi-level warnings. As expressed in earlier years' DACFO reports, to avoid the perception of adjusting verification numbers during the NWS Modernization and Associated Restructuring (MAR), the implementation of such changes will need to be deferred until wholesale changes associated with the MAR have been completed.

FOLLOW-UP 1998: In May 1997, a Team of NOAA employees and external customers was assembled by the National Weather Service's Office of Meteorology to examine severe thunderstorm warning criteria and make a recommendation on whether the criteria should be changed, and if changed, to what threshold of wind and/or hail size.

The Severe Thunderstorm Warning Criteria Team looked both at science and service aspects of Severe Thunderstorm Warning thresholds. Since the team was large (30) and diverse, it was split into four subgroups: Emergency Management/Customer Service, Science-Research/Training, Science/Operations, and External Users. Four subgroups cited both formal and informal studies performed by the NWS as well as insurance property loss groups and structural engineering firms, among others, addressing the problem. Informal surveys of emergency managers also were part of the process.

The Team recommended that the NWS adopt a new threshold of 1 inch as the minimum hail size for a Severe Thunderstorm Warning. Further, they recommended the wind speed threshold be left at or near 50 knots.

The Team also recommended the NWS investigate using other products, such as the "headlined NOW" with appropriate Valid Time Event Code (VTEC), currently being developed by OM, to provide information on strong but not severe thunderstorms. The Team recommended that OM, in conjunction with Regional Headquarters and local WCMs, work with national and local media and emergency managers to assure this information gets to customers with a need to know. Information concerning thunderstorms with hail sizes below 1 inch could be headlined in the NOW. As a corollary to this action, the Team also recommended the NWS stop issuing "routine" or "scheduled" NOWs.

The Office of Meteorology will continue to explore the concept of changing severe thunderstorm warning criteria, based on the Team's recommendations. OM has included the report on the OM Internet Home Page and is coordinating with other Federal agencies, hazards groups and volunteer organizations that share the NWS mission of saving lives and reducing property losses. If the changes are approved, they will be implemented in the spring of 2000.

FOLLOW-UP 1999: The Office of Meteorology has put together a draft Federal Register notice for the proposed change to modify hail size to one inch (keeping wind criteria the same), which will be coordinated with the regions prior to submission. **Pending regional approval, tentative target for any future implementation - May 31, 2000 (Mike Matthews).**

F2. Separate PIL for Hazardous Weather Outlook

RECOMMENDATION: The Thunderstorm Outlook/Hazardous Weather Outlook should get its own AFOS header instead of using SPS. Since this product is primarily for emergency manager and storm spotter use, it may contain somewhat technical jargon that may not be appropriate for the general public. Yet, this information gets readily sent to the public in the SPS via The Weather Channel, NWR, etc. If an alternate PIL were used, then this would be avoided. Also, this would make it easier for emergency management personnel to locate/receive the product without having to sort through other SPSs. And if more sophisticated users (public) would like this somewhat technical explanation, then they could access this product. Meanwhile, the general public would not be confused since products intended for them (e.g., SPS) would remain non-technical in nature.

RESPONSE 1998: The Severe Weather Outlook policy as described in WSOM Chapter C-40, section 7.2, is:

“A Severe Weather Outlook is used to inform the public about expected severe weather for the forthcoming convective period, i.e., beginning about 6 hours from issuance time. As such, technical terminology not generally used or understood by the local public and media should not be included.”

While emergency managers and spotters also are target audiences for the Severe Weather Outlook, the intent is to prepare the public at large using this product. If properly written, the Severe Weather Outlook can explain anticipated conditions to emergency management and spotters without using highly technical terms. The SPS is the proper vehicle for this product. However, with the increasing sophistication and knowledge both of spotters and emergency managers, there may be a need for a more technical product. The Office of Meteorology will explore this concept and the possibility of an additional PIL for its dissemination.

FOLLOW-UP 1999: The WSOM Chapter C-40 OML for the Hazardous Weather Outlook is being coordinated with the field at this time. The regions have not accepted a proposal for a new PIL, citing the move toward consolidation of products, rather than expanding the number of products. DACFO representatives are urged to work with MSDs to convince them of the need for the separate PIL, as three of the four CONUS regions voted against it (CR was for it).

The guidelines in the OML specifically state to avoid using the technical terms in the discussion with an optional technical discussion (labelled) to service more sophisticated customers. Also, severe weather outlooks and area forecast discussions contain technical material that forecasters can use to address technical issues. The SR approach to having an easily understood discussion with a separate optional technical discussion has been adopted within the OML thus far.

CLOSED (Mike Matthews).

Editor's Note: OM12 is recommending an action for the DACFO.

F3. Convective Watch Decentralization

DISCUSSION: There is still concern in the field that the Severe Weather Watch responsibility will be pushed onto the Forecast Offices before the final AWIPS and all its advanced data sets are in place and all field personnel receive advanced mesoscale training. This has been addressed before in DACFO, but the concern is still there. During modernization, some steps have proceeded before proper staffing, equipment and training have occurred. This cannot occur with the Severe Weather Watch responsibility. It is also the feeling of most Forecasters that this task should never be taken away from the SPC.

RECOMMENDATION: Keep the Severe Weather Watch responsibility at SPC, even beyond Phase III of modernization.

RESPONSE 1998: The discussion at the DACFO meeting indicated that this recommendation comes from concerns that the convective watch function will be forced on field offices before they are scientifically and technologically/operationally prepared. Such is not the case.

Director Kelly has determined that Phases II through IV of the Convective Watch Decentralization (CWD) initiative will be deferred pending resolution of field staffing workload issues and recently stated customer concerns. Resolution of the staffing and workload concerns

will require the NWS to have some experience with the Modernized and Restructured operational environment, and that experience is achievable during Phase I.

Therefore, we will proceed with Phase I according to the Convective Watch Decentralization Plan, which appears on the OM Internet Home Page. Phase I is a positive step in the convective watch program, regardless of subsequent decentralization plans. Phase I provides better spatial precision to watches, improved WFO redefine and clearance capability, and a mechanism for the Storm Prediction Center and NCEP Central Operations to provide hourly updates to watches on the radar summary graphic. Also, Phase I watch redefines will help us answer questions about the increased number of watches in Phases II and following, since all future WFOs will issue redefines and watch clearances using the new Watch County Notification (WCN) product.

The CWD concept remains sound. We can ensure success for subsequent Phases of the CWD by first delivering and implementing modernized technologies, adjusting to new staffing levels, completing forecaster training, and performing office restructuring and closure certification.

FOLLOW-UP 1999: Phase I field testing Dec. 31, 1999; implementation June 30, 2000. Phase II-IV deferred, pending field staffing workload issues and customer concerns. **Target June 30, 2000 (Therese Pierce).**

F4. Severe Weather Awareness in Parks and Recreational Areas

DISCUSSION: Outdoor recreational activities, such as camping, boating and hiking, reach a peak during the summer months, a time when there is a very real threat of severe weather. In August 1997, a 15-year-old boy was killed when a tornado moved through a campground at a state park in Sullivan County, Pennsylvania.* A tornado warning had been issued more than 10 minutes earlier for Sullivan County. A storm survey found that the campers were oblivious to the warning or the approaching storm.

* Details of this event can be found on the NWS State College Home Page at: <http://bookend.met.psu.edu/~ostuno/aug97.shtml>.

RECOMMENDATION: State parks and recreational areas, such as lakes and beaches, should be mentioned in NWS severe weather warnings along with towns. WSOM Chapter C-40 discourages this practice.

RESPONSE 1998: The WSOM discourages the use of lakes, beaches and recreational areas by themselves as location identifiers for areas threatened by severe weather. This is because beaches, rivers, state parks and lakes are irregularly shaped and often elongated, making them ambiguous as sole points of reference. When mentioning them adds value to a warning, recreational areas should be included along with reference cities or towns.

OM will draft an OML to WSOM C-40 which will include new phrasing about this issue and more clearly reflect support to use lakes, rivers, and parks as valid points of reference. As an

interim solution, OM has updated the WCM Job Aid (update of Annex A) to provide guidance to field offices in dealing with the issue of transient populations. It can be found on the OM Home Page.

FOLLOW-UP 1999: The OML to C-40, section 7.4.1.n, Event Location, encourages the use of well-known secondary reference points, such as lakes, parks, recreational areas, to identify location of a storm. The OML is currently going through the WSH approval process, with a **February 29, 2000 target implementation date. (Jannie Gibson).**

Public Weather - New Items

5. Wind Chill Criteria

DISCUSSION: The watch/warning/advisory criteria for winds and wind chill seems to differ with each CWA. Wind damage will occur at certain speeds whether it's Alaska or Florida. The effects of hypothermia and freezing as it relates to wind chill are the same whether it happens in Hawaii or Maine. Having different criteria in different areas without any scientific basis, is arbitrary and confusing, especially to people who travel from one area to another. If a situation is unusual, a Special Weather Statement can be issued, but having artificially low criteria makes no sense.

RECOMMENDATION: Standardize criteria for wind warnings and advisories as well as wind chill nationwide according to scientifically based information.

RESPONSE 1999: The statement that the effects of wind chill are the same for Hawaii or Maine is false. A significant factor in human response to extreme temperatures and wind chill is acclimatization, which varies considerably from one section of the country to another. The Alaska Region representative stated they use -60 degrees as the standard for wind chill advisories, which obviously is not applicable in the great majority of the lower 48.

The Chapter C-42 guidelines state that regional guidelines are to be used to determine local wind chill, so regional MSDs should be consulted where studies show local criteria should be modified. Since there is no scientifically-based information supporting a standard wind chill for the whole country, such an implementation of a national standard is not justified. **CLOSED (Mike Matthews).**

6. Headlines & NPWs for Frost/Freeze Conditions

DISCUSSION: We no longer officially coordinate with agricultural interests to obtain data on stages of growth, harvest, or production of crops across the state. Now the season for issuing Frost/Freeze Warnings is quite arbitrary and not related to economic impact. Yet we evaluate the importance of Frost/Freeze to that of High Winds, Excessive heat or severe cold.

RECOMMENDATION: Either re-establish ties with agricultural community or do away with headlines and NPWs for Frost/Freeze. If the forecaster thinks it is important, simply insert the possibility of frost/freeze conditions in the forecast, not as a headline or warning.

RESPONSE 1999: It appears that C-42 is shortsighted in that it implies that the agricultural community is the only large customer base for Frost/Freeze products. The general public also has an interest in these products. For example, gardeners are concerned about when to plant their flowers or vegetables, and how to protect them once planted. Rather than doing away with Frost/freeze as an element, I suggest updating WSOM Chapter C-42 to identify other possible customers. **Revisit or write the OML to C-42 and coordinate with regions. Target July 31, 2000 (Mike Matthews).**

Public Weather - Follow-Up Items

F5. Partial Updates of ZFPs

DISCUSSION: Some NWS offices do partial updates of their Zone Forecast Products (ZFP). After several updates, this procedure will create a string of incomplete ZFPs and requires the user to search back several updates and/or corrections to find the zones they are looking for.

RECOMMENDATION: The entire ZFP should be transmitted during amendments and/or corrections. In addition, a short explanation of the reason for the amendment and/or correction prior to the first grouping would be very helpful.

RESPONSE: Transmitting the entire ZFP for every amendment or correction would place a burden on communication systems. This concern may be resolved when spin-up offices assume ZFP responsibility. The lesser number of zone groupings after transfer to spin-up offices would likely reduce the size of the product, making it possible to retransmit the entire message.

OM will survey a variety of customers at the next Customer Service Workshop, planned to be held during February 1999, to assess whether they want or can handle the entire product.

The future CLZ (Combined Local Zone) software may assist with combining segmented ZFPs and other products for non-AWIPS users.

FOLLOW-UP 1999: OM surveyed a variety of customers at the Partner's Workshop, April 27, 1999, to assess whether they want or can handle the entire product. The results of the survey are being analyzed and a decision will be reached by the November-December 1999 follow-up update.

FOLLOW-UP NOVEMBER-DECEMBER UPDATE: After analyzing the results of the survey it was decided that the national policy (WSOM C-11) will be to only issue the updated zone(s) of a ZFP package update, but the regions may, in response to regional or local customer

requirement, decide to issue a full ZFP package after an update. **Target implementation date for C-11 is February 29, 2000 (Jannie Gibson).**

F6. Use LSRs for Reporting Real-Time Winter Weather Phenomena

DISCUSSION: WFOs use variable methods of reporting snowfall or other winter weather events and often do not report these phenomena in real-time. Reports, when sent, may appear in special weather statements, public information statements, weather summaries, winter storm warning statements, or (rarely) local storm reports. This variability makes it difficult to find verification data. Moreover, WFOs have difficulty discerning the real-time weather situation at “upstream” and other relevant locations.

RECOMMENDATION: Expand the role of local storm reports (LSRs) to include winter weather. Establish guidelines for reporting an event that would verify any warning (including winter storm, heavy snow, blizzard, ice storm, dust storm, etc.) in an LSR as soon as possible after the report is received.

RESPONSE 1997: This has been discussed in OM and was suggested over a year ago. Some offices do this already and it appears to work well. No formal action has been taken, however, since the information is available in other messages. This will likely be addressed in the next update of WSOM C-42 (likely late in FY 98...for winter 1998-99).

FOLLOW-UP 1998: This is already being done but is not updated in the chapter. This will be addressed in the next update to WSOM C-42, scheduled for winter 1999-2000.

FOLLOW-UP 1999: This will be addressed in the next update to WSOM Chapter C-42 to make this a national policy. **Target February 29, 2000 (Jannie Gibson).**

F7. Sky Condition in the Public Forecasts

DISCUSSION: Forecasts are sometimes issued without a sky condition even when only “chance” or “slight chance” POPs are forecast. The term “fair” relates to less than 4/10 opaque clouds and no precipitation or extreme conditions of visibility, wind or temperature. Many times, “fair” is used incorrectly in conjunction with other qualifiers, as in “fair and cold.”

RECOMMENDATION: Require sky conditions in the forecast when POPs are less than categorical. Discontinue using “fair” in the forecast.

RESPONSE 1997: Agree, and this is being addressed in the update to WSOM Chapter C-11 that is underway. It is hoped that the draft C-11 will be available by fall or winter of 1997.

FOLLOW-UP 1998: The C-11 update is scheduled to be done June 1, 1999.

FOLLOW-UP 1999: The first draft of the update to WSOM Chapter C-11 addresses this recommendation. The entire draft is undergoing regional review. **Target implementation date February 29, 2000 (Jannie Gibson).**

F8. Duration Terms Implying Categorical POPs

DISCUSSION: Under current guidelines, duration terms such as “occasional,” “periods of,” and “brief” imply categorical POPs.

RECOMMENDATION: Change the definition of duration terms so that they do not imply categorical POPs. This would allow the forecaster to word the forecast in a way that would better communicate his/her intention to the user, e.g., “chance of a brief shower” or “periods of rain likely.”

RESPONSE 1996: Terminology related to POPs will be reviewed, and this will be addressed in the update of WSOM Chapter C-11. This update will begin in June or July 1996.

FOLLOW-UP 1997: This is being addressed in the update to WSOM C-11, which is expected to be available in the fall or winter of 1997.

FOLLOW-UP 1998: OM will conduct a customer survey in conjunction with the upcoming Customer Service Workshop, scheduled for February 1999, to assess user perception of current terminology. Following the survey, a review of **all** POP terminology will commence. If warranted, the C-11 update (delayed until FY 99) will address any change. C-11 target - June 1, 1999 (Mike Matthews).

FOLLOW-UP 1999: OM12 is evaluating NWS (Juneau) and non-NWS (Sink, Murphy) survey results on POP terminology perception. At the conclusion of this evaluation, a decision will be made as to what terms should be modified. Any changes will be addressed in the WSOM Chapter C-11 update. Further surveying may be necessary to make a decision on some of the recommendations. **Target implementation date for C-11 is February 29, 2000 (Jannie Gibson).**

F9. Change “Widely Scattered” to “Few”

Editor’s Note: This was listed under OM11 in 1995.

DISCUSSION: In a study conducted by the WSFO at Salt Lake City (SLC), it was shown that the public does not know the meaning of the term “widely scattered.” Most of those surveyed thought that “widely scattered” meant a Probability of Precipitation of greater than 50 percent—the word “widely” was often taken to mean “over a wide area!”

RECOMMENDATION: In WSOM Chapter C-11, replace the term “widely scattered” with “few.” Reclassify areal terms as follows: 0-24% FEW, 25-50% SCATTERED, and 60-70% NUMEROUS.

RESPONSE 1995: This suggestion should be analyzed on a nationwide basis before an official policy change is made. WSOM Chapter C-11 is up for revision in FY 96. At that time, this issue will be decided through the regional chapter review process.

FOLLOW-UP 1996: The update of WSOM C-11 will begin in the next several months. Review of POPs terminology will be a part of the update considerations with review by the regional offices and selected field offices.

FOLLOW-UP 1997: This is being addressed in the update to WSOM C-11, which is expected to be available by fall or winter 1997.

FOLLOW-UP 1998: A user survey will be conducted in conjunction with the next Customer Service Workshop, scheduled for February 1999, to assess all POP descriptive terms. Any necessary changes will be addressed in the WSOM Chapter C-11 update (FY 99). C-11 target - June 1, 1999 (Mike Matthews).

FOLLOW-UP 1999: OM12 is evaluating NWS (Juneau) and non-NWS (Sink, Murphy) survey results on POP terminology perception. At the conclusion of this evaluation, a decision will be made as to what terms should be modified. Any changes will be addressed in the WSOM Chapter C-11 update. Further surveying may be necessary to make a decision on some of the recommendations. **Target implementation date for C-11 is February 29, 2000 (Jannie Gibson).**

Hurricane Program- New Items

7. Hurricane Watches and Warnings for Inland Counties

DISCUSSION: The Tropical Prediction Center issues Hurricane Watches and Warnings by marine breakpoints for coastal areas only. Hurricane force winds inland are currently covered by High Wind Warnings. Common sense would dictate that a Hurricane Watch or Warning be issued for any county (including inland counties) in which hurricane force winds are expected. For example, TPC was still tracking Andrew as a hurricane although inland counties were not under a Hurricane Warning. Inland High Wind warnings for hurricane force winds are confusing and add to the volume of products during landfalling hurricane situations.

RECOMMENDATION: TPC should issue Tropical Storm or Hurricane Watches and Warnings for all counties (including inland counties) that are expected to meet the wind criteria. Hurricane Watches and Warnings for the U.S. should be issued by counties as opposed to marine

breakpoints. Hurricane Local Statements should cover coastal flood warnings and watches, marine warnings, and strong winds below tropical storm force.

RESPONSE 1999: The issue of whether a high wind warning or a tropical storm/hurricane warning is issued for inland counties should be raised at the annual NOAA Hurricane Conference, which is attended by regional MSD focal points. The proposal to change how this is done needs to be accompanied by customer feedback demonstrating that one system is better than the other.

There is disagreement within the meteorological community regarding how to best serve both general public and marine communities in hurricane warnings. TPC has indicated that they are amenable to changes in points, which can be coordinated through the regional MSDs.

The recommendation to alter the Hurricane Local Statement to not cover hurricane conditions needs to be reevaluated. Why call it a hurricane local statement if it doesn't discuss the primary hurricane threats of high winds (above the tropical storm threshold of 40 mph!) and fresh water flooding? Why issue a statement that avoids discussing major impacts? The suggestion also contradicts the prior suggestion to issue tropical storm/hurricane warnings for inland high winds. If we covered just coastal flood warnings and watches, marine warnings, and strong winds below tropical storm force, what would we write for impacts in hurricane local statements for inland counties under a tropical storm/hurricane warning? **CLOSED (Mike Matthews).**

8. Watch and Warning Hierarchy During Hurricanes

DISCUSSION: Hurricanes pose a multitude of weather threats to landfalling areas, including rainfall flooding, storm surge, and tornadoes. When hurricane conditions are possible along the coast, hurricane watches and warnings are issued by TPC and severe weather watches are issued by SPC. The local WFO is responsible for flood outlooks/watches/warnings, high wind outlooks/watches/warnings, high wind advisories, inland advisories for hurricane force winds, and tornado/severe thunderstorm warnings. These localized conditions are headlined in the Hurricane Local Statement (HLS). The tremendous number of local products that are routinely issued by the WFO in a hurricane watch/warning situation makes for an extremely heavy workload on the office, and, with the sheer number of headlines, makes the HLS very unwieldy for local emergency managers and the media to keep track of.

RECOMMENDATION: A hierarchy of watches/warnings should be used with regard to hurricanes. If a hurricane watch/warning is issued for a particular segment of the coast, other watches/warnings should not be necessary. The hurricane watch/warning should include all threats of the hurricane including tornadoes, flooding rains, storm surge, and high winds. The HLS, supplemented by the short term forecast (NOW), could then be used to describe the potential effects without overwhelming the users with the myriad of headlines.

RESPONSE 1999: The 1999 version of Chapter C-41 creates separate bullets for each impact, so customers can easily scan for impacts of interest following each highlighted bullet, such as

wind impacts and storm surge impacts, with separate sections for headlines and areas impacted. We disagree with the assertion that all impacts fall within the hurricane warning. Significant flooding and tornadoes occur outside the area of hurricane conditions, and continue after a hurricane has been downgraded all the way to a depression or an unclassified area of low pressure. Additionally, these impacts are highly variable within the hurricane warning area, so it cannot be assumed that they are all major threats everywhere for the duration of the warning. **CLOSED (Mike Matthews).**

Technological Hazards - Follow-Up Item

F10. Fallout Wind Backup Procedures Are Obsolete

DISCUSSION: WSOM Chapter D-42, section 4.2, still designates upper air stations as the backup to NCEP in the event NCEP cannot calculate fallout winds. It also states that the technical aides used for this purpose will be maintained in a state of readiness. Many upper air sites have not kept the old manual plotting boards to complete this mission. The chapter also states that each regional headquarters will give periodic exercises to keep staffs proficient at this task. We are not aware of regional headquarters proctoring any of these drills in recent years.

Chapter D-42, section 2.5, also requires WSFOs and WSOs to keep current fallout wind vector data and be able to interpret it. The chapter refers to obsolete dissemination systems also.

RECOMMENDATIONS:

- (a) Update WSOM Chapter D-42 to reflect the current upper air and NWS communications systems.
- (b) Program the current and future upper air software systems to automatically compute fallout winds.
- (c) After the software is in place, eliminate the requirement for upper air sites to calculate fallout winds.

RESPONSE 1998: During August, OM, OSO, and NCEP began their review of WSOM D-42 and other related nuclear references for inclusion in WSOM J-08, NWS Response to Radiological Emergencies. The working group consists of OM, OSO, NCEP, regional and field offices. The goal is to incorporate any elements of D-42 into the new J-08, eliminating D-42 completely. The issues raised through the DACFO have been presented to the working group. NWS support will be coordinated with FEMA, the Nuclear Regulatory Commission (NRC), and the Department of Energy once an outline for the new chapter has been drafted.

FOLLOW-UP 1999: The fallout winds are being calculated by the NCEP models and are available on a daily basis. DACFO's help is needed to ascertain which elements of WSOM Chapter D-42 are still valid, and which are out of date, so the relevant material can be retained in

WSOM Chapter J-08. When complete the Chapter will be coordinated with the regions. **Target July 31, 2000 (Jannie Gibson).**

Aviation Program - New Items

9. TWEB Transmission Window

DISCUSSION: In this age of high-speed data transmission there appears to be little reason for the difference in transmission windows for TAFs and TWEBs.

RECOMMENDATION: Make the length of the window for sending TWEBs the same as TAFs (20 minutes).

RESPONSE 1999: The TWEB transmission window times and length are specified in D-30 to be:

Issuance Time (UTC)	Valid Period (UTC)	Transmission Period (UTC)
0200	0200 TO 1400	0130 TO 0140
0800	0800 TO 2000	0730 TO 0740
1400	1400 TO 0200	1330 TO 1340
2000	2000 TO 0800	1930 TO 1940

The TAF transmission window times and length are specified in D-31 to be:

SCHEDULED ISSUANCE	VALID PERIOD	ISSUANCE WINDOW
0000 UTC	0000 TO 0000 UTC	2320 TO 2340 UTC
0600 UTC	0600 TO 0600 UTC	0520 TO 0540 UTC
1200 UTC	1200 TO 1200 UTC	1120 TO 1140 UTC
1800 UTC	1800 TO 1800 UTC	1720 TO 1940 UTC

Forecasters are encouraged to transmit terminal forecasts at the beginning of the issuance window whenever possible, to facilitate timely delivery of the forecasts to our customers and to ease communication loading at the end of the issuance window.

The TAF transmission window was expanded from 10 minutes to 20 minutes when the NWS changed from the FT code to the TAF code in 1996. The expansion of the TAF transmission window was requested by the Federal Aviation Administration (FAA) to ensure all the TAFs would be disseminated before the hourly METAR data stream began. Previously, the FT transmission window was 20 to 30 minutes before beginning of the valid time, the same as the TWEB transmission window.

As there are only half as many TAFs as TWEBs, so there was no FAA concern with the length of the TWEB transmission window.

OM12 is not aware of any need to lengthen the TWEB transmission window to make it the same as the TAF transmission window. OM does not support the TWEB transmission window times and length to match the TAF transmission window times and length. **CLOSED (Chris Alex).**

10. TWEBS Not Used by FAA Flight Service

DISCUSSION: As a former Aviation focal point in the Midwest, I know that our TWEB route products were not being used by the FAA Flight Service. They were producing their own route forecast with other available data. My informal contacts with VFR pilots have also led me to believe that the TWEBs are not being used. My limited experience on the West Coast also indicates that TWEBs are not being used by our customers.

RECOMMENDATION: TWEB route preparation should be decided on the local level through coordination with the local FAA Flight Service Station. Offices which drop TWEB routes may need to prepare additional TAFs, as required by local customers.

RESPONSE 1999: OM12 shares your concern regarding underutilization of TWEB products. OM12 will be working with the FAA Aviation Weather Requirements Division in the 4th quarter of FY99 to revalidate national requirements for the TWEB products. These discussions with the FAA will review all aspects of the TWEB product, including possibly replacing TWEB routes with some other type and format of product. The Western and Central Region Aviation Meteorologists will be drafting a proposal in the next month for OM12 to present to the FAA to initiate this dialogue. OM12 disagrees with the DACFO recommendation that TWEB route discontinuation decisions be made locally. We have learned from experience that multiple Flight Service Stations rely on TWEB routes, so it is not appropriate to make these decisions locally. **Target September 30, 2000 (Dorothy Haldeman/Christine Alex).**

Aviation Program - Follow-Up Items

F11. Redesign the Formats and Headers of Area Forecasts

RECOMMENDATION: The need to redesign the formats of the Area Forecast (FA) and update its headers has long been recognized. Both the Aviation Weather Center (AWC) in Kansas City and the Alaska Aviation Weather Unit (AAWU) in Anchorage continue to transmit products under defunct headers—generating confusion among users as to which NWS office actually writes a given product. Also, many FA zone divisions do not support the current needs of pilots or pilot briefers. A major update to FA formats and headers should no longer be delayed. Making these changes will not be easy and is sure to upset some users who will have to update their software to properly receive and process the information, but the improvement in service is worth the temporary inconvenience. The National Weather Service was recently able to make a relatively sudden switch to METAR in accord with international agreements. This was neither popular nor simple—requiring drastic changes in the format of the terminal forecast as well as the surface observation. However, once a definitive date was set for these changes to take effect, both forecasters and users were able to make the transition. Updated formats for the FA should be handled similarly. The NWS needs to start work immediately with the FAA and other users to agree on new FA zone boundaries, size and order of FA elements, new FA headers, and a definitive date for the big change to take place.

RESPONSE 1998: OM12 is coordinating with OSO21, the Aviation Weather Center, and keeping the FAA informed on changes and additions to WMO Headers and AFOS PILs of NWS products, including Area Forecasts. OM12 has coordinated with the Alaska Aviation Weather Unit so that their headers would be representative of current operations. OM12 is waiting for guidance on a new Alaska FA to be implemented covering the Aleutian Islands west of Adak and the Pribilof Islands to determine whether the boundary of an existing area will change, or a new area will be created. For the conterminous 48 States, FAs will be divided into the same geographical areas as domestic SIGMETs: East, Central and West. The new AFOS PILs and WMO headers will reflect the new division. We are also coordinating the implementation of a location identifier for the Aviation Weather Center (to be used in the WMO header), and new WMO headers and AFOS PILs for SIGMETs for volcanic ash and tropical cyclones. The specific changes are still being developed. We expect to complete the planning, coordination, associated software development, and notification in time for implementation.

FOLLOW-UP 1999: The implementation of the changes to the area forecast (FA) geographic boundaries and WMO headers for both the contiguous 48 states and Alaska has been delayed so that all changes will be effective the same time. The delay is to accommodate a recent Federal Aviation Administration request to add FAs for the western Aleutian Islands, and Pribilof Islands, and to allow the AAWU to realign the boundaries of its FA areas. The AAWU MIC is working on the changes with OSO242.

Also, the Aviation Weather Center has recommended changing the production and transmission times of the Area Forecast so that it leads the TAF and TWEB and could be used as guidance for those products and not vice versa.

A new schedule for implementation is being developed and will be proposed accommodate all those proposed changes. Consequently, AWC and the Regions will have to come to a decision to

formalize this by producing the OML to WSOM Chapter D-20. Coordination will take months to complete. **Target July 31, 2000 (Richard Stone).**

F12. WAFS Needs Some Improvements

DISCUSSION: The World Area Forecast System (WAFS) has lots of potential, but the T4 graphics only serve a select few. It is pretty useless in Honolulu because the wind charts are mainly polar.

RECOMMENDATION: ALDEN, who developed the system, needs to rewrite the software to make it more user friendly in terms of Alphanumeric data and GRIB data.

RESPONSE 1997: The statement that the T4 graphics only serve a select few is correct. However, as a result of the conversion to the mainframe at NCEP, only a small percentage of the wind and temperature charts are being produced as required—the U.S. is currently very deficient in the output of charts. When the conversion is complete, one of the back-logged tasks will be to bring the U.S. into compliance for the global Polar and Mercator projections.

However, for significant weather charts, the Aviation Weather Center in Kansas City will be preparing them and following the international requirements for expanded areas later this year.

Coordination is occurring with the Alden Corp. to improve the handling or user friendliness for alphanumeric data in the ALDEN computer workstation. They are working to improve this situation but their work has not been provided to the NWS for review.

FOLLOW-UP 1998: NCEP personnel are actively working on the programming to produce the polar and Mercator projection wind and temperature charts required to meet the United States commitment to International Civil Aviation Organization (ICAO) and the needs of our users. NCEP has begun to produce test grids. The plan is to add all required forecast products for one area, beginning with Area A and progressing through Area K.

The WAFS charts are produced from the AVN runs at 00 and 12Z and consist of the expanded forecast periods +6, +12, +18, +24, +30 and +36 hours. The WAFS charts are gradually being introduced, one ICAO area at a time. The level required for each area are:

ICAO Area	Levels
1. A	500 400 300 250 200mb
2. B1	500 400 300 250 200mb
3. B	100 70mb
4. C	500 400 300 250 200mb
5. D	500 400 300 250 200mb
6. E	500 400 300 250 200mb
7. F	500 400 300 250 200mb

8. G	500 400 300 250 200mb
9. H	500 400 300 250 200 100 70mb
10. I	500 400 300 250 200mb
11. J	300 250 200mb

Charts for Areas A, B1, F, H, I and J, the areas for which WAFC Washington is responsible, are operational. Areas A, B1 and F are Mercator projection and H, I and J, are polar stereographic. The other ICAO Areas: B, C, D, E, and G, which are in the area covered by WAFC London, and will be back-up for charts produced by London, will be operational by May 31, 1999 (Dorothy Haldeman).

With respect to the upper level SIGWX forecast charts, the Aviation Weather Center (Regional Area Forecast Center [RAFC] Washington) has expanded the area of coverage of a Mercator projection chart and is working on adding a new ICAO area polar stereographic chart. World Area Forecast Center (WAFC) Washington, in addition to transmitting RAFC Washington SIG WX charts, also transmits SIG WX charts produced by WAFC London, and RAFCs in Buenos Aires, Brasilia, Melbourne, Wellington and Tokyo. The specific areas covered by each chart and the charts available may be viewed on the following Internet Web page:

<http://weather/fax/wafccig.shtml>.

As a step toward final WAFS implementation, the U.S. has agreed to a time table for taking over production of upper level SIGWX charts which are now produced by the five RAFCs listed above. The transition of responsibility for production of the operational forecast charts to WAFC Washington will be completed in mid-2000.

FOLLOW-UP 1999: This item is complete. Upper level wind and temperature T-4 charts are now being produced by NCEP and transmitted on the WAFS broadcast for all required ICAO areas, flight levels and forecast time periods. The Hawaiian Islands are covered by a Mercator Projection area. **CLOSED (Richard Stone).**

Marine Program - New Items

11. Return to Using Counties in Special Marine Warnings

DISCUSSION: Current procedures tell us not to mention county names for Special Marine Warning boundaries; use coastal break points instead. This is a problem to state Emergency Management officials; they frequently are confused as to which counties are affected.

RECOMMENDATION: Return to at least including county names when describing boundaries for Special Marine Warning areas.

RESPONSE 1999: SMWs are primarily to warn the mariner of conditions that are severe to him/her. Counties are not identified on nautical charts, so adding counties would add nothing of value to the mariner while making the warning longer. Recommend WCMs provide maps and/or training to Emergency Management officials who need to know about SMWs.

CLOSED (Laura Cook).

12. Backup for Marine Prediction Center (MPC)

DISCUSSION: Currently, the Tropical Prediction Center (TPC) has backup responsibility for MPC offshore forecasts. This was established with the idea that TPC would be doing the offshore forecasts that are currently done by New Orleans and Miami forecast offices. At this time, after talking to Laura Cook in the Office of Meteorology (OM), offshore marine forecasting will not be transferred from New Orleans and Miami to TPC. Due to the lack of experience and training in writing the offshore forecast, the product will be compromised if TPC is required to backup the MPC offshore forecast.

RECOMMENDATION: Will offshore marine forecasting from WFOs Miami and New Orleans will be transferred to TPC in 1999? If the answer is no, we recommend changing the backup offshore marine responsibility between MPC and TPC. Remember, WFOs Miami (MIA) and Honolulu (HNL) are each collocated with National Centers (i.e, Central Pacific Hurricane Center (CPHC) and TPC). In this scheme CPHC/HNL would backup MPC off the West CONUS coast and the TPC/MIA combination would backup MPC off the East CONUS coast.

RESPONSE 1999: If the offshore forecast from Miami and New Orleans does not transfer to TPC, OM will work with NCEP and the appropriate regions to determine if the recommended approach is feasible. **Target April 30, 2000 (Laura Cook).**

13. High Seas and Offshore Forecasts

DISCUSSION: TPC has expressed concern about the geographical overlap of the HIGHS SEAS forecast and the OFFSHORE forecasts South of 31N. The OFFSHORE has 'period' format and the HIGH SEAS has 'event' format and the criteria of the wind threshold is different in the two products. This can only lead to conflicts and unnecessary coordination.

RECOMMENDATION: Look into new ways of handling coordination between National Centers and forecast offices. This could be through OM consulting with NCEP and the Regions as to who should have final say to ensure that information across forecast boundaries are as consistent and uniform as possible. TPC has suggested that the same office write both products.

RESPONSE 1999: The criteria of the wind threshold are different between the two products because they are issued for different customers. The High Seas Forecast is primarily for the transoceanic ships that can withstand higher winds and seas. They are generally on a fixed route

and need to know when conditions are in their path that they need to avoid. The Offshore Forecast is generally for the large commercial boats, or others who go beyond the coastal waters. These mariners are usually going to a specific location, hence the format that provides a forecast for each location regardless of the weather, and cannot withstand the same winds and seas that the larger ships can. **CLOSED (Laura Cook).**

Marine Program - Follow-Up Items

F13. References for Completing Marine Observations

DISCUSSION: Since 1979, Marine Reporting Station (MARS) sites have had two references to use for completing observations. One is the Marine Weather Observing and Reporting Guide. The other is the cover of the Marine Coastal Weather Log, NOAA Form 72-5a. Neither source is all inclusive for those attempting to complete Marine Observations.

RECOMMENDATION: Develop one reference source combining the information in the above mentioned publications. This would serve at least two purposes. (1) It would eliminate much of the confusion since all of the pertinent information would be in one source rather than two. (2) The cost of producing the logs would be reduced because the bound cover would no longer need to be printed.

RESPONSE 1998: OM12 agrees with the DACFO recommendation that references and instructions used by Marine Reporting Stations (MARS) to report weather observations should be updated, and that these should be available as one handy reference. OM12 plans to prepare a new, comprehensive MARS observing manual for completion by Sept. 30, 1999. The manual will contain all appropriate definitions and descriptions of scientific terms, detailed observing and reporting instructions, and photographs where applicable. OM12 will also design an updated version of the observing form, which will be included as part of the manual. The manual will be stocked at the National Logistics Supply Center (NLSC) in Kansas City, MO.

FOLLOW-UP 1999: Expected completion - **March 31, 2000 (Tim Rulon).**

F14. Need Replacement to Honolulu Marine Facsimile Broadcast

DISCUSSION: Honolulu operates a marine facsimile broadcast (KVM-70). As staffing is reduced, we will be unable to continue this operation. Is anything being planned to replace this broadcast?

RECOMMENDATION: Start planning how to replace this service.

RESPONSE 1997: Marine radiofacsimile station KVM-70 is owned and operated by the Navy. At present, a viable alternative to radiofax broadcast by HF radio does not exist. Broadcast of

charts via satellite systems, such as INMARSAT C, is technologically feasible but not economically viable.

Access to graphical products via the Internet or computer bulletin boards is only possible for ships with advanced communication systems such as INMARSAT A. Currently, NWS radiofax products for the Atlantic, Pacific and Gulf of Mexico are available via the Internet (WWW, FTP and e-mail) as well as by HF broadcast. Radiofax products for Hawaii and Alaska are broadcast but are not available via the Internet. OSO is examining alternatives with Alaska to make their products available via Internet and replacing antiquated hardware used to route radiofax products to the USCG. The approach selected should also be applicable to Hawaii.

The manpower required to prepare radiofax products can be minimized using automated processes. This is being performed to varying degrees by Hawaii, Alaska, Marine Forecast Branch (MFB) of the Marine Prediction Center (MPC) (Atlantic and Pacific) and the Tropical Prediction Center (TPC) (Gulf). MPC and TPC are using Intergraph workstations with generally favorable results. AWIPS offers further potential for developing graphic products using a minimum of manpower.

OM is requesting funding for the FY 98 and FY 99 budget cycles to include upgrading equipment and software used for facsimile product preparation and transmission. At this time, it is not known whether or not that request will be granted.

FOLLOW-UP - JUNE 1998: In August 1997, a meeting organized by OM12 was held at NCEP with representatives from all relevant offices to discuss modernization of the NWS radiofax program.

The draft implementation plan resulting from this meeting calls for Hawaii to shift to a workstation environment using N-AWIPS platforms to create radiofax products efficiently. The required N-AWIPS software is undergoing development and testing at NCEP and will be phased into operation there in the April-November time frame. The software should be available for distribution before the end of the fiscal year. Hawaii has expressed a desire to proceed with the implementation of N-AWIPS for radiofax production as rapidly as possible.

A radiofax server is required for conversion of the graphic files to radiofax audio signals for distribution to station KVM-70 for broadcast. Hawaii has also indicated that their existing Alden D-200 server is in need of replacement. The estimated cost for a radiofax server is \$20K for software and \$5K for hardware.

OSO is working with Alaska to develop an alternative for the services provided by AKFAX, which is planned for termination. Termination of AKFAX has been given a high priority within NWS. As part of this development, OSO is planning to fund the replacement of Alaska's D-200 radiofax server. OSO does not have sufficient funds this fiscal year to procure additional radiofax servers for Hawaii.

An option may exist to procure a software license that would allow unlimited distribution of the radiofax server software within NWS. OM12 has coordinated a joint procurement with OSO and the Alaskan and Pacific Regions.

FOLLOW-UP - NOVEMBER 1998: A MARTA radiofax server and spare have been procured by OSO for Honolulu, with funding assistance by W/OM12. The systems will be delivered to Honolulu this month. OSO is assisting Honolulu in transitioning from the present radiofax dissemination process to the MARTA system which will use graphic products created in a workstation (N-MAP) environment. A similar transition is nearing completion in Alaska where MARTA systems were procured as a result of the shutdown of the AKFAX system. The target date for full implantation of a modernized means of producing radiofax graphic products will be dependent on the resources that Honolulu can devote to making the transition.

As a secondary issue, it is anticipated that the military will shift the Honolulu radiofax broadcast from the NAVY's Lualualei transmitter site back to the Air Force site at Ewa Beach sometime during 1999. This will require a change in the leased line.

FOLLOW-UP 1999: A MARTA radiofax server and spare have been delivered to Honolulu for installation. According to MIC James Weyman, the system will be operational in the June 1999 time frame using N-MAP generated maps for input. Two MARTA systems sent to Honolulu but the hard disk had been damaged enroute with no other backup system provided. An error-free copy is not available. Now waiting on an NT version of the software. OSO has not yet accepted it from MARTA but getting closer to eliminating most of the bugs in the software. When received, an operational software will allow us to directly interface with the WAFS system for certain products that we are currently using from the DIFAX. **Completion date expected during 1999 but delayed til 2000 - we hope in the first 6 months (Tim Rulon with James Weyman).**

OFFICE OF METEOROLOGY

SCIENCE AND TRAINING (OM21)

QPF - New Item

1. Add WINQPF to AWIPS

DISCUSSION: Offices will be stepping away from AFOS and async communications shortly after official commissioning of AWIPS, yet status of the application WINQPF has not been discussed. No timetable has been given to when WINQPF will be available on AWIPS.

RECOMMENDATION: Add WINQPF program capability to AWIPS as soon as possible.

RESPONSE 1999: The current AWIPS Grid Modification (GMOD) tool encompasses many of the capabilities inherent in WinQPF. The WinQPF capability to display multiple windows (e.g. each six hour QPF and their aggregate) is the only primary functional capability currently not available with GMOD. While a forecaster cannot display multiple windows using GMOD, they can overlay QPF contours (forecast isohyets) for other forecast periods, which serve as a useful reference to generate a spatially and temporally coherent QPF. Furthermore, while WinQPF is primarily a drawing tool which renders a grid from the forecaster-generated graphic QPF product, GMOD enables the forecaster to initialize and edit a grid directly with sophisticated grid editing tools. However, prior to utilizing AWIPS (GMOD), WFOs must provide TDL (Ronla Meiggs) a list of the Mean Areal Precipitation (MAP) basin IDs which constitute their respective Hydrologic Service Areas (HSAs), so that an accurate grid mask and QPS product can be generated. During the Build 5 time frame, FSL's Graphical Forecast Editor (GFE), with similar functionality to GMOD, will replace GMOD as the standard AWIPS Grid editor. **Closed (Tom Graziano).**

OFFICE OF METEOROLOGY

TECHNOLOGY AND FORECAST SYSTEMS CORE (OM22)

AWIPS - New Items

1. BUFKIT Capability on AWIPS

DISCUSSION: BUFKIT, created by forecasters at the Buffalo, New York office, provides forecasters with a unique method of examining not only convective potential but also the difficult forecast situations involving wintry/mixed precipitation. This tool, currently not being supported at the national level, has received national awards. It is not yet available on AWIPS.

RECOMMENDATION: Add BUFKIT program capability to AWIPS as soon as possible.

PRELIMINARY RESPONSE (3/10/99): This is being considered as a Build 5.x capability within the Build 5.x field prioritization process. The odds of BUFKIT being implemented in Build 5.x are low, given the volume of requests received. If not included, BUFKIT could be developed locally or regionally.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

2. Model Data Archiving at WFOs

DISCUSSION: It would be ideal to archive a 12-, 24-, 36-, or 48-hour period on AWIPS for later use. Archived data, on a data cartridge or tape, would include model grids, satellite, radar, observed surface and upper air data, etc. This capability would greatly help in constructing case studies, training aids, or other research pursuits.

RECOMMENDATION: AWIPS should allow us to archive to a separate data cartridge or tape the full array of AWIPS data for any given amount of time. The data would need to be replayed without interfering with current updates.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

3. Add State Scale to 4-Panel Radar Display

DISCUSSION: Currently (Build 4.1), you can only view 4 panel radar data on the WFO scale. When we need to provide backup warning duties for adjacent offices, we can not see the backup area on the AWIPS WFO map.

RECOMMENDATIONS: Reconfigure AWIPS to allow the user to display the 4 panel radar data on the state scale from the radar pull down menus on the D2D.

PRELIMINARY RESPONSE (3/10/99): Localization as the site for which you are providing backup would allow evaluation of radar data on the WFO scale for the other WFO. This should provide interim capabilities until a state scale 4-panel display is available.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

4. Cross- and Time-Section Upgrades

DISCUSSION: (a) Points and baselines for cross sections, time-height sections, and model soundings should be user-specific to allow each forecaster to set his personal points and baselines. (b) All time-height profiles (e.g., model time-height sections, 88D VAD wind profiles, etc.) on AWIPS should have the same time direction.

RECOMMENDATIONS: (1) Make points and baselines user-specified so that each user name can set his own point and baseline locations. (2) Make all time height profiles have the same time direction, i.e., current or latest time on left, and oldest time on right.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

5. Saving Personalized Cross-Section Settings

DISCUSSION: With AWIPS one can display cross sections along particular lines and time/height cross-sections at particular points. Users can define procedures that display cross-sections utilizing points or lines at specific locations. The problem is that users all utilize the same set of lines and points and each user can edit the positions of the lines and points. Thus, as one example, one user may set up a cross-section for line A over the northern part of a state; but if another user has edited the position of line A so that it lies over the southern part of the same state, when the first user displays the cross-section for line A it will be in an unexpected location.

RECOMMENDATION: Allow each user to have their own personal file containing points and lines which they can edit to suit their own particular interests.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

6. Saving Personalized Image Enhancements

DISCUSSION: Hours are spent personalizing Image Enhancements, only to have them changed or deleted by someone else.

RECOMMENDATION: AWIPS should have the capability to save Image Enhancements under one's user ID, like procedures.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

7. UKMET/ECMWF/NOGAPS Model Data in AWIPS

DISCUSSION: There is currently little or no UKMET, ECMWF, or NOGAPS data available on AWIPS. Forecasters need a single source of model data, including model data from the popular medium range forecast models from non-NWS sources.

RECOMMENDATION: Add complete model sets of UKMET, ECMWF, and NOGAPS onto the AWIPS data stream.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

8. Expand the Suite of Extended Model Data Output

DISCUSSION: Forecasters have found the European, UKMET and NOGAPS models of value in evaluating the most likely forecast scenario for the extended period. There is a need to have more than just the MRF model on AWIPS for forecasting beyond 3 days.

RECOMMENDATION: Provide a full suite of model output for the MRF, ECMWF, UKMET, and NOGAPS models on the AWIPS product browser.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

9. Make more medium range models available

DISCUSSION: Data from European, Canadian, and NOGAPS (among others) models has proven useful in operational forecasting, and should be part of the AWIPS data package.

RECOMMENDATION: Add the complete suite of these three models to the AWIPS data package.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

10. Alaska Region non-NCEP Model Requirements for AWIPS

I. ECMWF (in GRIB format) *Highest Priority !!!*

A. Grid 201 (“A” Grid, Northern Hemisphere)

Upper Air:

- 1) levels 1000, 850, 700, 500, 400, 300, 250, 200, 150, 100 hPa
- 2) projections: 0,12,24,36,48,60,72, 84, 96, 108, 120, 132, 144, 156 hours
- 3) fields: geopotential height, temperature, vorticity, divergence, U, V, vertical velocity

Mean Sea Level pressure matching projections above.

B. Grid 203 (“J” Grid, Alaska National)

Upper Air:

- 1) levels: 1000, 925, 850, 700, 500, 400, 300, 250, 200, 150, 100 hPa
- 2) projections: 0,6,12,18,24,30,36,42,48,54,60, 72, 84, 96, 108, 120, 132, 144,156 hours
- 3) fields: geopotential height, temperature, vorticity, divergence, U, V, vertical velocity, SH, plus assorted products from the ensemble prediction system

Mean Sea Level:

- 1) matching projections 0,6,12,18,24,30,36,42,48,54,60,72, 84,96,108,120,132,144,156 hours
- 2) fields: 10 meter wind, 2 meter temperature, 2 meter dew point, total precipitation, pressure, total cloud cover,

II. NOGAPS from Fleet Numerical (in GRIB format) Official Backup for NCEP.

A. Grid 201 (“A” Grid, Northern Hemisphere)

Upper Air:

- 1) levels 1000, 850, 700, 500, 400, 300, 250, 200, 150, 100 hPa
- 2) projections: 0,12,24,36,48,60,72, 84, 96, 108, 120, 132, 144, 156 hours
- 3) fields: geopotential height, temperature, vorticity, U, V

Mean Sea Level pressure matching projections above.

B. Grid 203 (“J” Grid, Alaska National)

Upper Air:

- 1) levels: 1000, 925, 850, 700, 500, 400, 300, 250, 200, 150, 100 hPa
- 2) projections: 0,6,12,18,24,30,36,42,48,54,60, 72, 84, 96, 108, 120, 132, 144,156 hours
- 3) fields: geopotential height, temperature, vorticity, U, V, vertical velocity, RH

Mean Sea Level:

- 1) matching projections 0,6,12,18,24,30,36,42,48,54,60,72, 84,96,108,120,132,144,156 hours
- 2) fields: 10 meter wind, total precipitation, pressure. All sea state parameters for the North Pacific, Gulf of Alaska, and Bering Sea.

III. UKMET (in GRIB format)

Grids 201 and 203 for similar fields, projections, and levels as given for the ECMWF.

IV. CMC Latest Spectral Model

Grids 201 and 203 (Alaska) for similar fields, projections, and levels as given for the ECMWF, plus all sea state parameters for the North Pacific and Gulf of Alaska on Grid 207 or 214.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

11. Distance Measuring Tool in AWIPS

DISCUSSION: AWIPS users need an easy-to-use tool to measure distances. The Distance Bearing Tool can be used, but that method is a little slow and cumbersome. During warning or forecast operations, AWIPS users need a quick measuring device to quickly obtain distances between cities/towns and meteorological features, e.g. storm-to-town distances.

RECOMMENDATION: Add a "Tape Ruler" for measuring distance to AWIPS. For example, by pressing the space bar and middle mouse button, you set "HOME", and then you get an instant readout of distance in "nm" and "sm" from HOME as you move the cursor. Also, a line is drawn as the cursor is moved around the screen. A method or tool like this would be excellent for measuring storm-to-town distances during warning or forecast operations. .

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

12. Add Beginning Time to Storm Total Precipitation Product

DISCUSSION: Display of radar Storm Total Precipitation (STP) does not indicate the beginning time of the product.

RECOMMENDATION: Add begin and end times to the STP product on AWIPS.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

13. Isallobaric graphics; Bogus Initial Pressure Fields

DISCUSSION: Currently on AWIPS there is no simple method for obtaining Sea Level Pressure change (isallobar) graphics. Although it may be built with the product maker, it will be faulty due to the bogus initial pressure fields.

RECOMMENDATION: The bogus Sea Level Pressure data problem (possibly associated with reduction to sea-level pressure) in AWIPS should be fixed. Also, isallobaric graphics should be available without having to use the product generator.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

14. Valued Application Programs from Alaska Region

DISCUSSION: The Alaska Region has been operationally running a HP/UNIX based network for 9 years (ARONET). There are some excellent applications that can readily be adapted to use on AWIPS right now. Chief among these is an excellent forecast composer (XMFCOMP), the alpha-numeric products display (WXD), and a very user-friendly model and satellite data display (xmMAP). There is also a very good sunrise/sunset program (xmSunMoon), as well as a climate program (xmClimate).

These programs, especially the first three, are leaps and bounds ahead of anything currently on AWIPS or the drawing board for AWIPS, and they are much more user friendly.

RECOMMENDATION: Alaska Region's ARONET software should be installed on AWIPS, especially XMFCOMP, wxd, xmMap, xmSunMoon, and xmClimate.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

15. GOES-Derived Upper Air Sounding in AWIPS

DISCUSSION: GOES sounding data is not available on AWIPS. This a very valuable tool in evaluating model performance and improving NWS forecasts over the models.

RECOMMENDATION: Make comprehensive sounding and upper level wind data available on AWIPS. Continue to fund GOES derived soundings and upper level wind diagnostic data on all future GOES satellites.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

16. Geographic Information System (GIS) in AWIPS

DISCUSSION: Forecasters need detailed GIS data to improve situational awareness and assess impacts of both short and long term forecasts on geographic features and on human assets. The fine detail in GIS would allow an accurate mesoscale assessment of mesonet, radar, and satellite data. Local forecast applications could make use of the detailed terrain available from the GIS files. This functionality would support operations, case studies, verification, and local applications.

RECOMMENDATION: Include GIS capability in AWIPS.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

17. Standardizing Products and Status of NWS Messages

DISCUSSION: The National Weather Service issues a wide variety of both routine and non-routine public products. NWS and external users need assurance that the most recent version of products are databased. This assurance acts directly to validate the efficiency, effectiveness, and credibility of the NWS. It also allows other agencies and the Private sector to use and disseminate our products with confidence. The increase in using the Internet/WEB to disseminate NWS products further demands a way of verifying product status.

RECOMMENDATION: The means to accomplish this product tracking would be to initiate a standardized Product Status Message, produced at the WFO level, as well as a similar product from the national centers. Internally, coordination would benefit from automated product tracking and notification, through summary text messages and graphical displays derived from such messages. Externally, the messages could be used in any variety of automating checking, dissemination, and display programs.

It should be possible for AWIPS to assign a unique Z day product number or ID to each issued product that would correspond to products in the Status Message. Sub-codes could also be included, if used in watches and warnings. The actual status message would be quite short and issued automatically by AWIPS hourly (as a baseline check) and also with the issuance of each new product. The average CWA would have about 4 or 5 outstanding products on a non-weather day but, perhaps 10 or more in very busy weather. The messages would, of course, be time stamped as it leaves the on-station AWIPS. A program internal to AWIPS could verify the message against the database and/or update a graphical display for forecaster review.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

18. Improving Satellite Products on AWIPS

DISCUSSION: For several years we, in western region, have had a good-quality, high-resolution fog/stratus image loop available on RAMSDIS. The presentation of this particular satellite product on AWIPS is grainy and nearly unusable.

RECOMMENDATION: Bring the image resolution for the fog/stratus satellite product on AWIPS up to RAMSDIS standards.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

19. Speed up data transport to AWIPS sites

DISCUSSION: Data ingest across the SBN with the new AWIPS is slow, at best, and needs to be much faster to be useful. For example, when an office receives mandatory and significant level data from upper-air soundings, it's available from AFOS often 30 to 45 minutes faster than in AWIPS. Plots of this data take even longer.

RECOMMENDATION: Enable faster means of data transport to end AWIPS sites.

DACFO Regional Representative's Comment - This will become more important by orders of magnitude when AFOS is decommissioned. I've seen delays in receiving severe convective products from adjacent offices of 5-10 minutes frequently. I'd argue that such delays would be unacceptable for a commissioned system.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

20. Overhaul the Product Maker

DISCUSSION: The Product Maker still does not function properly, forcing offices to use LAN technology to view fields unavailable in AWIPS. In addition, the syntax proposed for its use is cumbersome and non-intuitive.

RECOMMENDATION: Completely overhaul the Product Maker section of AWIPS, and install a replacement that will use commands and macros developed in PC-GRIDDS.

DACFO Regional Representative's Comment - If the NWS is committed to having AWIPS be an all-around forecasting tool, this needs to be part of the equation.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

21. Local Watch/Warning/Advisory Feature Needs Improvement

DISCUSSION: The local Watch/Warning/Advisory (W/W/A) feature in AWIPS needs to be updated. Several LAN-based programs do this much more effectively, and the inferiority of the AWIPS feature creates one less reason to use AWIPS exclusively in our office.

RECOMMENDATION: Improve the aesthetics of the W/W/A feature. Some suggestions include: outline the warned county instead of hatch-filling - tornado warnings in red, severe thunderstorm warnings in blue, flash flood warnings in green; display specific information on the warning only when the mouse is clicked over the warned area (similar to how observations are displayed now).

DACFO Regional Representative's Comment - We still use LAN-based tools for this purpose, partially because we didn't like how the current cross-hatching obscures overlays of other data.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

22. Radar Reflectivity and Cross-Section Creation

DISCUSSION: The current method of creating radar reflectivity and velocity cross-sections is slow and cumbersome.

RECOMMENDATION: Improve the way AWIPS creates these products, or simply implement the Warning Decision Support System (WDSS) from the National Severe Storms Laboratory (NSSL) entirely.

DACFO Regional Representative's Comment - We've been lucky enough to have had WDSS here for the last two severe convective seasons, and we've found it very useful and immensely superior to AWIPS in diagnosing and predicting convective activity.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

23. Drawing Contour Lines

DISCUSSION: When trying to display contoured data (model, observed, or LAPS), there's no current way to limit the number of lines drawn (for example, don't contour LI values greater than zero). This feature is widely available in LAN-based diagnostic tools.

RECOMMENDATION: Allow users to define a range of values for which contour lines will be drawn.

DACFO Regional Representative's Comment: Would be nice to have, both in convective and winter storm cases.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

24. LAPS grid size

DISCUSSION: The LAPS grid is too small for effective regional analysis.

RECOMMENDATION: Increase the size of the LAPS grid.

DACFO Regional Representative's Comment - LAPS data is intended to be, and indeed is, a strong advantage of AWIPS analysis. It should be improved so that it can be used to its fullest extent.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

25. Climatological Data Archiving in AWIPS

DISCUSSION: With AWIPS to assume the role of the Forecast Office's operational workstations, provisions need to be made for the creation of climatological databases within AWIPS. More generally, virtually no provisions made been made to date for the retention of any past AWIPS data. The uses for this data are broad and diverse, and are most acutely focused in the climatological and research areas - two areas very much neglected so far in the AWIPS rollout.

RECOMMENDATION: Create a database of AWIPS data, in a cross-platform format suitable for direct viewing, both in text and graphical form, and manipulation by other applications. Create applications that will be able to manipulate this data for climatological and academic purposes.

DACFO Regional Representative's Comment - This has been asked about since Day 1 of the CUT 1 training class, before Build 1 was sent to the field, but we've still heard no concrete plans for data archival and manipulation.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

26. Record Temperature Displays

DISCUSSION: Before the termination of the National Weather Summary, there was a convenient way for users to view record-breaking temperatures throughout the nation. One section would usually contain a list of record high or low temperatures. In the past, this list was often reproduced on an AFOS graphic NMCGPHP0X or NMCGPHP0N.

During an arctic outbreak, we had a request for record minimum temperatures from a local TV meteorologist for use on his telecast. We were not able to conveniently accommodate him. The only way on AWIPS to get the record events is to call up individual CCCRERXXX reports on a text workstation; this proves cumbersome and time-consuming.

RECOMMENDATION: Create a product, either a text collective or nationwide map, that contains record minimum or maximum record temperatures twice each day.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

27. Use of the "J" Symbol on Surface Plots

DISCUSSION: A few years ago we began to differentiate automated surface observations from manual observations on surface plots with a "J" symbol. Today a vast majority of the surface reports are from automated equipment, hence the "J" symbol is present on over 95 percent of the plotted stations and thus has lost its usefulness.

Currently when analyzing surface charts the absence of a weather indicator can be misleading. Most stations (ASOS) omit a weather symbol when there is no weather occurring. However some stations (AWOS) do not report present weather (or only report it in the remarks section) thus there is no weather symbol plotted when weather could be occurring.

RECOMMENDATION: Drop the "]" symbol as it is currently used. Instead, use the "]" symbol to denote stations that do not report present weather in the body of the observation (AWOS). These observations can be distinguished by the A1 (AWOS) vs the A2 (ASOS) codes appended to the METAR observations. This should be applied to all surface based plots, i.e. surface plots, weather depictions, etc., which would help to interpolate possible weather conditions at stations that don't indicate present weather.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. (**Robin Radlein**).

28. Quality Control and Other Miscellaneous Functions

DISCUSSION: The Hydrometeorological Technician (HMT) has the responsibility of data management and acquisition. Among these duties lies the important job of quality control of local data, both meteorological and hydrological. AWIPS, through LDAD, can provide the user with important information on quality control of data ingested into the AWIPS LDAD database. This information includes: percentage failure of observations by provider (MTR, Buoy, etc.), the number of stations, the stations which failed, and in some cases the listing of data and the provider information. Data is provided on an hourly, daily, weekly, and monthly basis. Currently, no easy access exists to this information. In Build 4.2, a tabular listing can be accessed through the text workstation (see, for example, Figure 1 at the Web site: http://waw-sdd.fsl.noaa.gov/MSAS/qems_smry_descrip.html). Currently, this information is only available to the LDAD database and not the entire AWIPS local database.

Local data sources, along with hydrological data, such as ALERT, LARC, SNOTEL, and mesonets, will continue to increase in the forecast office. This will require more and more time to quality control and assess the status of the data. In addition, these local data can be used in many different local applications, such as the Local Analysis and Prediction System (LAPS) and local mesoscale modeling (including, perhaps, NCEP models). Knowing the quality of the available data for these applications is also very important in the interpretation of the output from these applications, e.g., hourly surface analyses. In addition, many of these local data will be used in conjunction with radar and satellite data in AWIPS for mesoscale interpretation in the preparation for local area severe weather or flood warning situations.

RECOMMENDATION: It is suggested that a graphical subjective intervention capability and graphical representation of the quality control statistics be made available through AWIPS (see example: <http://waw-sdd.fsl.noaa.gov/MSAS/qems.html>). This would allow the HMT a quick and easy look at the quality control for data management and analysis. This is currently a large portion of the job activities of the HMT (ref. Position Description of a Senior WFO Hydrometeorological Technician GS-1341-11). A Graphical User Interface (GUI) could be

developed which would allow the user to quickly assess which stations were having problems. One could click on the station and receive information such as failure rate, and a provider to contact. Data could be flagged with various QC flags which could be applied in the local applications. In order for this capability to really work in the forecast office, all data in the AWIPS databases need to be QC'd in a timely and efficient manner.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. (**Robin Radlein**).

AWIPS - Follow-Up Items

F1. Single PUP Command for Archive IV Dump/Auto Archive Startup

DISCUSSION: During a severe weather or other important weather situation, NWS offices often archive WSR-88D products during the event. To store information in Archive IV, there are two options - dump the data repeatedly using the A, A, D command or start the auto archive by using the A, A, A, I, N command. With these two options, there is sort of a Doppler dilemma.

If data dumps are accomplished, then one needs to remember to do this occasionally during the event. The problems with the data dump include: (1) You must remember to send command every few hours, (2) Inefficient use of optical disks - all data is dumped from PUP database even if it is already archived.

If the auto archive feature is started, it will record and no one will need to remember to dump the data, and there also will be no duplicate data archived. The problem with auto archive is that the recording starts with data AFTER the auto archive command is given. So if the recording is started after the first Severe Thunderstorm Warning is issued, then the data leading up to the warning and used for the warning will not be recorded.

RECOMMENDATION: Make a single command for the PUP that dumps the Archive IV database and subsequently starts Auto Archive as soon as the database dump is completed. For example, a user could type A, A, D, A to accomplish the Data base dump and then automatically start Auto Archive.

RESPONSE 1998: AWIPS Build 4.2 will permit archival of all radar products received in the regional area, regardless of source radar, when Auto Archive is started and will end data archival when Auto Archive is stopped. In a later build, additional archive capabilities, such as the ability to select products to archive and the ability to select all radar products available for a given interval of time, will be added. OM will recommend that the additional capability described here be added to AWIPS as well, with timing to be determined in consideration with other field requested priorities. Target for Build 4.2 - August 31, 1999 (Robin Radlein).

FOLLOW-UP 1999: Build 4.2.2 has been released. **CLOSED (Robin Radlein)**.

F2. ECMWF and UKMET Model Data on AWIPS

DISCUSSION: It would be highly desirable to obtain a more complete data set from both the ECMWF and UKMET models (see “DACFO ACTION” note, below). The solutions from these models can (and in the case of the ECMWF during the cool season often does) provide a more desirable solution than the MRF. Even with just the limited data set from these European models currently available via AFOS, forecasters can often make a much improved extended forecast than if they only had the MRF to use. Additional data from these models, including greater temporal resolution and more timely distribution, may provide additional benefits to forecasters when formulating the extended portion of the forecast, thereby providing better service to the users.

RECOMMENDATION: The NWS should obtain/negotiate for these detailed data sets and then distribute them promptly throughout the NWS. Surely there is/can be an arrangement to share data between meteorological agencies. Educational institutions seem to be able to obtain the ECMWF, as seen on Web sites. Distributing this data in a timely manner should be feasible with AWIPS. (It is curious that AWIPS Build 3.1 provides less European data than what is currently on AFOS.)

RESPONSE 1998: The Satellite Broadcast Network (SBN), the method of distribution for all model guidance data, provides free access to data to any individual or group with a downlink. This unfortunately forces some limitations on the distribution of model data from these agencies. The AFOS “red book”¹ Graphics products developed from these models will be available in AWIPS Build 4.2. That portion of ECMWF and UKMET models which may be freely distributed will be sent as gridded products on the SBN and will be available on AWIPS Build 4.2.

DACFO ACTION: OM requests that the DACFO specify which ECMWF and UKMET grid parameters are required (see the first sentence of the first paragraph of this item) and they will be added to Appendix K and build requirements.

Editor’s Note: The DACFO has played a large role in the Build 5.x prioritization process. As of the 1999 meeting, this item is closed and activity in this area is documented in new items 7 through 10 (1999 DACFO Final Report, OM22 - AWIPS Section). **CLOSED (Robin Radlein).**

F3. Requests for Audible Alarms

DISCUSSION:

¹ “Red book” graphics is a format definition (from a red book) that allows analog graphic products, such as hand-drawn maps, to be transmitted and rendered graphically. These are generally “manually” produced AFOS graphics, such as the 90R or AFOS model graphics, as opposed to presentations created on site using digital data (e.g., radar mosaics) or gridded data decoded and rendered as graphics.

- (a) There is no direct notification of a fire alarm at the RDA.
- (b) Wide Band may be down several minutes before being detected. This is of particular concern at AWIPS sites where the PUP may not be continuously monitored and warnings are issued from the AWIPS workstation.
- (c) NEXRAD Unit Status indicates lines are up and Product Status is available, but new products are not storing.

RECOMMENDATION: Request audible alarms at the UCP/PUP for: (a) fire alarm at the RDA, (b) Wide Band disconnect, and (c) PUP stops storing data.

Note: A similar, less specific recommendation appeared in the 1993 through 1997 reports under OSO1x3 (NEXRAD Program). It requested that an alarm or flashing message be added to the PUP for system problems and failures (it did not mention fire alarms). OSO1x3 submitted an RC to the Configuration Control Board (CCB) for approval in a future software build. OM22 has indicated that this problem will be resolved on the AWIPS through Netscape Data Monitoring.

RESPONSE 1998: It is not practical to continue requesting and planning enhancements to the WSR-88D PUP, as the final software build expected to affect the PUP nears its release date. Future enhancements of this nature will be met by AWIPS. In this context, the specific items identified here will be preserved as AWIPS requirements. OM will recommend that AWIPS audible alarms be permitted on a site-configurable basis for fire alarms at the RDA, loss of communications between the RDA and RPG, and failure in the acquisition or storage to database of the WSR-88D data. This requirement must be prioritized relative to other requirements for AWIPS Builds 5 and 6. Prior to providing the ability for the site to build event notification schedules for specific radar-related issues, the site will have the ability to monitor the radar data acquisition process through the Netscape Data Monitoring browser.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

F4. ROSA Error-checking Capabilities

Editor's Note: This item was listed as item #1 under OSO14 in 1996 and 1997.

DISCUSSION: A large part of our hydrological reporting network comes from observers who send their observations to us via Remote Observation System Automation (ROSA). Unfortunately, many of these observations are sent with obvious errors. We had an observation reach us recently with a 24 hour snowfall of 1000 inches. There are similar errors for temperature and precipitation.

RECOMMENDATION: Develop the ROSA capability to flag these errors and notify the observer. We understand that some error-checking is available in the ROSA software, but it is disabled.

RESPONSE 1996: ROSA is being replaced by PC-ROSA. We will explore error checking capability that is more user friendly, but this will be a significant effort and may not be accomplished. Eventually, the PC-ROSA will be replaced by LDADS, and the capability of error checking will have to be addressed.

FOLLOW-UP 1997: PC-ROSA is being planned to be replaced by LDADS. Therefore, error checking will be addressed within the LDADS review and development process.

FOLLOW-UP 1998: PC-ROSA capabilities will be included in AWIPS Build 4.2 as part of the Local Data Acquisition and Dissemination (LDAD) function. In addition, preliminary automated data quality control and error checking are expected to be part of the LDAD capabilities.

FOLLOW-UP 1999: Build 4.2.2 has been released. **CLOSED (Robin Radlein).**

F5. Forecasts in Graphic Form

Editor's Note: This item was listed under OM12 in the 1996 and 1997 reports.

DISCUSSION: The forecast product output of the NWS is almost entirely in the form of text. Text is necessary for conversion to voice over NWR and other voice circuits; however, the media, emergency managers, and the public are demanding more information in the form of graphics. The "graphic" age is here. AWIPS will have the capability of making graphics very portable, but the best format for graphic forecast output is still unknown. For example: (1) Do we want terrain, road systems, or political boundaries on the new graphics? (2) What symbols, shadings and colors should be used?

RECOMMENDATION: Develop graphic versions of zone and state forecasts and test public reaction over the Internet as soon as possible. This will ensure that a graphic format will be ready for AWIPS.

RESPONSE 1996: AWIPS will produce gridded forecast fields which can be converted to graphics by the users. It is an excellent idea to begin experimenting with formats and content now. However, the use of the Internet for other than informal communication is discouraged because timeliness and assured delivery can not be guaranteed or even monitored by NWS. The OM Service Implementation Manager position is vacant but is expected to be filled this summer. The new person should work on this item.

FOLLOW-UP 1997: Each program leader is involved in efforts to develop new products, including graphics, related to their program. Some of these products and ideas were presented to customers at the NWS Dissemination Technology Conference, April 15-18, 1997. The goal is to have some of these new graphics available for later AWIPS builds. In its FY 98 budget request, OM12 has asked for a contractor in FY 98 to start the development of the product formats, etc. At this time, it is not known whether or not that request will be granted.

FOLLOW-UP 1998: The LDAD function of AWIPS will include as one of its dissemination capabilities a Web site for emergency managers. AWIPS will provide the capability after Build 5 to use the forecaster modified digital forecast database as the source of production of a new suite of graphic and image forecast products which can be provided to this local Web site as well as other distribution methods. OM will continue to work through the service area program leaders and the Regional contacts to define and develop the proposed formats for these new graphical and image products.

RESPONSE 1999: Awaiting Build 5.x prioritization decisions. **(Robin Radlein).**

Radar - New Items

29. Tops and Movements in Radar Reports

DISCUSSION: Automated Flight Service Stations (AFSS) used to rely on the radar reports for tops and movements. The new software that creates the radar reports only includes the tops and movements if the precipitation meets certain criteria. This happens less than 20 percent of the time and is not acceptable for the AFSS briefers.

RECOMMENDATION: Change the software so that most reports have tops and movements included in the radar reports.

RESPONSE 1999: The discussion from the DACFO concerns perceived Federal Aviation Administration (FAA) AFSS requirements rather than NWS requirements. The “radar reports” in the DACFO issue refers to the “AUTOROB” which is an automatically generated radar observation based on the Radar Coded Message (RCM). In 1994, there were significant problems identified with the AUTOROBs, but the NWS addressed all of the FAA’s concerns and improved the quality of them in 1996. The OM radar team continues to work closely with the FAA weather requirements team at FAA Headquarters on weather radar data issues. The FAA uses the NWS provided AUTOROB in combination with other vendor provided radar information in their AFSS operations. The FAA is satisfied with the current status of the AUTOROB. **CLOSED. (Rich Lane)**

30. Use RCM Data for Convective Parameters

DISCUSSION: Radar Coded Message (RCM) data contains many valuable bits of information, and observed data in convective situations is very useful.

RECOMMENDATION: Collect and compile RCM data, especially wind profiles, and use these data to create storm-relative helicity values, mean winds for storm motions, and many other convective parameters. DACFO Regional Representative’s Comment: This would be very useful to us.

RESPONSE 1999: This item points out the need to collect and compile radar data from a number of radars and make derived products available to field operations units. The RCM solution offered in this DACFO item is a reasonable suggestion. The NWS is already on a path to deliver better quality products than can be obtained through an RCM generated product suite based on NWS requirements to centrally collect radar data and planned LAN-LAN AWIPS/NEXRAD connections. **CLOSED. (Rich Lane)**

31. Elevation Slices Below 0.5 Degree in WSR-88D

DISCUSSION: Over the past few years that we have had our WSR-88D in Shreveport, we have seen numerous occasions where low-level rotational features, sometimes tornadic, are not detectable at ranges where the radar beam is above about 8000 feet AGL. A newer detection technique for single-cell microbursts, which utilizes convergence signatures in the 6,000- to 10,000-foot range has proven to be very effective, but once again its usefulness is limited by beam height beyond 80 nautical miles from the RDA.

The County Warning Area (CWA) of NWSO Shreveport includes several areas of substantial concern for us because they are beyond the range at which WSR-88D can detect weaker tornadoes or ordinary cell microburst velocity convergence just above cloud base height. The table below lists some of these problem areas.

Location	0.5 degree beam height (ft)	Distance from RDA (mi)
Monroe, LA	10400	86
S. La Salle Parish, LA	13890	104
Lufkin, TX	10200	85
Tyler, TX	8400	75
Quitman, TX	10600	88
McCurtain Co., OK	15295	112

Furthermore, some of these locations are well populated, which heightens our concern. Both the Monroe, LA, and Tyler, TX, areas have populations greater than 100,000 persons (1990 US Census data).

RECOMMENDATION: A new VCP should be created for the WSR-88D to include elevation slice(s) below 0.5 degree. To keep somewhat in line with the current scan strategies, an equal number of slices above 9.9 degrees could be eliminated. Our office would not be the only one to benefit from a new VCP such as this. Lower elevation slices would also be useful on 88Ds in mountainous areas, where it is sometimes difficult to see phenomena occurring at lower elevations, and also at stations in the Great Lakes area, where slices below 0.5 degree would help in diagnosing areas of lake-enhanced snow.

RESPONSE 1999: This item should be dropped from the DACFO agenda. Lowering the elevation angle below 0.5 degrees remains a highly sensitive and political issue. There have been a number of requests in the past for this capability through the proper change management process. Both NWS and the Tri-agency Program Management Committee (PMC) have considered the issues associated with lowering the elevation below 0.5 degrees. They have concluded that there should be no attempt to lower the elevation angle. There remains politically active groups that would oppose any attempt to lower the elevation angles at this time.
CLOSED. (Rich Lane)

Radar Follow-Up Items

F6. Display Last Clutter Suppression File

DISCUSSION: WSR-88D Build 9.0 finally provided the radar operator with a way of determining what clutter suppression is being applied at the RDA. The product can be a bit cumbersome to request at times, especially when waiting for the RPG to create it. The radar operator needs a faster way of determining which clutter suppression file was last downloaded to the RDA.

RECOMMENDATION: Add a line on the RDA Control Menu at the UCP or the NEXRAD UNIT STATUS at the PUP that shows the LAST CLUTTER SUPPRESSION FILE DOWNLOADED.

RESPONSE 1998: The current product will be available and easily viewable on AWIPS in Build 4.2. Additionally, the new Open Radar Product Generator (ORPG) graphic user interface (GUI) has many features that make determination of current clutter suppression easily discernable (see Home Page referenced in OM22, item F2, “request for audible alarms.”)

FOLLOW-UP 1999: See the 1998 response. The current version of the ORPG GUI provides the ability to easily view and change the clutter suppression. The clutter suppression product generated by the RPG or ORPG is displayable on AWIPS with Build 4.2.2 which has been released. **CLOSED (Rich Lane).**

F7. Regional Radar Mosaics

DISCUSSION: It would be very advantageous if all offices received a regional mosaic of WSR-88D radars. This would allow a forecaster to quickly assess a weather situation and determine relative movement of precipitation.

RECOMMENDATION: Develop a system with regional mosaics and looping for all offices.

RESPONSE 1996: We agree that national and regional mosaics are necessary for use by field forecasters, as well as being used in RFCs and NCEP. Requirements for mosaics, which include

looping and zoom capability are being written into the WSR-88D Open Systems Architecture and AWIPS requirements. A working group within the NWS is still exploring ways of providing mosaics in a cost effective manner as an interim measure until AWIPS and Open Systems capabilities are realized.

FOLLOW-UP 1997: Requirements for regional and national mosaics are contained in the NWS “Requirement for the Operational Use of Weather Radar Data (Open Systems Architecture),” document dated December 16, 1996. This document was submitted to OSD for inclusion in the “Tri-Agency Requirements (TAR) for Operational Use of Weather Radar Data” in December 1996.

Mosaics should become a reality in the AWIPS/NEXRAD Open Systems era. They may be available in late 1999.

FOLLOW-UP 1998: This requirement is partially met by current AWIPS Build 4.1 capabilities. In Build 4.2 the radar is in precipitation mode, regional radar mosaics of base reflectivity, base velocity, storm relative velocity, composite reflectivity, vertically integrated liquid (VIL), and storm total precipitation will be available, using inputs from surrounding radars via the satellite broadcast network. A wider range of products will be added to subsequent builds. Build 5 will have national radar mosaic capability.

FOLLOW-UP December 1999 Update: AWIPS is on a path to deliver radar data for mosaicing, regionally. It is being done now. **Closed (Rich Lane).**

F8. Locations of WSR-88D Field Maxima

DISCUSSION: The WSR-88D has the capability to identify the maximum value of each product generated during each volume scan. It would be very advantageous to have the Azimuth and Range of that maximum value included on each product during each volume scan and to have the ability to get this information on any area which is chosen with the recenter magnification functions 2X, 4X and 8X. This would streamline the warning process, especially when used in conjunction with automated warning programs such as AZRANWHIZ. An example would be inserting the coordinates of a 65 VIL into AZRANWHIZ to get a warning with greatly enhanced specificity.

RECOMMENDATION: Add azimuth and range to the maximum value on each radar product. The maximum value with azimuth and range for subsequent “recenterings” and magnifications should also be available.

RESPONSE 1996: We agree that this is a good idea and will submit the Request for Change (RC) for review and action through the change management process. If approved, the change would be scheduled for a later build. WSR-88D software build 9.0 has some improvements that will partially address this issue.

FOLLOW-UP 1997: A Change Request was submitted for this feature. At the March 19 NNC meeting, the group decided this capability could not be included in Build 10 and should await the delivery of the functionality within AWIPS, as it is a user work station capability.

FOLLOW-UP 1998: OM will ensure that this is an NWS priority at the Open Build 2 System Requirements Evaluation Committee (SREC).

FOLLOW-UP 1999: See follow up 1998. OM will ensure that this product is submitted as a part of the ORPG Build 2.0. **Target December 31, 2001. (Rich Lane)**

F9. Easy Access of the Alarm at the UCP

Editor's Note: This item was listed under OSO1x3 (NEXRAD Program) in the 1995 through 1997 reports.

DISCUSSION: The UCP displays the system status (ST,S) including any alarms. Whenever an alarm has been overwritten by other status messages, the operator must page through up to 99 pages to find it.

RECOMMENDATION: Establish a place where the cause of an alarm can be obtained until manually deleted (or time purged).

RESPONSE 1995: We will submit a WSR-88D change request. The earliest it could be included in a software upgrade is Build 10.0.

FOLLOW-UP 1996: Request for Changes (RCs) for 1995 recommendations 1 through 3 have been submitted and approved by the NWS NEXRAD Committee as well as the tri-agency Configuration Control Board.

FOLLOW-UP 1997: A Request for Change (RC) has been submitted and approved by the NWS NEXRAD Committee as well as the tri-agency Configuration Control Board for implementation in a future open systems build.

FOLLOW-UP 1998: OM will check on current plans for GUI; will bring to the Open Build 2 SREC.

FOLLOW-UP 1999: This element has been completed in the ORPG GUI (UCP replacement) and will be delivered with ORPG Build 1.0. **Target September 30, 2000. (Rich Lane)**

Surface Observations - New Items

32. Audio Alarm Whenever ASOS Detects "UP"

DISCUSSION: Whenever ASOS detects unidentified precipitation (UP), it is the observers' duty to immediately check and edit the precipitation accordingly. Currently, ASOS does not give the observer an effective alert/alarm of this UP occurrence. If the observer is away from ASOS (assisting the forecaster, working focal point duties, etc.), there is no way to know if the precipitation has changed to UP.

RECOMMENDATION: ASOS should give an audio alarm whenever it detects UP. This would alert the observer in the same way that ASOS would if a Special Observation was being taken.

RESPONSE 1999: ASOS has an alarm capability that can be set to notify the observer whenever a special is about to be taken. That alarm is there to provide for the conscientious observer who chooses to be notified prior to the transmission of each observation so it can be quality controlled. Since the safeguarding functionality already exists in the ASOS this RC would most likely not pass a tri-agency review by the ASOS Configuration Control Board. This is exacerbated by the fact that the ASOS processor is overburdened at this time and this is resulting in problems with clock accuracy. **CLOSED (Joanne Swanson).**

Surface Observation Follow-Ups

F10. Wind Chill Values Equal to 39°F or Less

DISCUSSION: Wind chills are currently calculated for air temperatures less than or equal to 36°F *regardless of wind speed*. Numerous customers (golf courses, day care centers, schools, sporting events, radio stations, etc.) request that the hourly roundup include *all wind chills equal to 39°F or less*.

RECOMMENDATION: Change the national hard-coded program (State/Regional Weather Roundup) to accommodate the above request. It is up to the users whether or not they want to read the indicated wind chill value.

RESPONSE 1998: Given the consensus of the DACFO, OM concurs and will coordinate this proposal with the regions. If they concur, OM will move to implement nationally.

FOLLOW-UP 1999: This is complete in AWIPS Build 4.2.2. **CLOSED (Robin Radlein).**

F11. Glaze Accumulation Algorithm (ASOS)

DISCUSSION: WSOM Chapter C-42 defines thresholds for issuing winter storm warnings for freezing rain based on quantitative glaze accumulation thresholds. However, forecasters have no source of glaze observations. During the past 3 winters, Charles Reyerson (CRREL) and Al Ramsey (Hughes STX) have been working with the ASOS Program Office and several NWS field offices to develop a glaze accumulation algorithm based on output from the ASOS freezing

rain sensor. Results thus far indicate that this algorithm can provide forecasters, as well as other users (e.g., utility companies, aviation community) with valuable real-time ice accretion information.

RECOMMENDATION: Implement this glaze accumulation algorithm into ASOS with output as a remark in METAR observations.

RESPONSE 1998: The DACFO recently provided OM with the necessary information to implement this request. The request is now an OM requirement.

FOLLOW-UP 1999: Proposed remark coding and information requirements were coordinated by OM with the field and with OFCM. The change has been approved by the ASOS Configuration Control Board and by the ASOS Program Management Committee and has been assigned a priority of “urgent” to ensure inclusion in ASOS software version 2.8. **Target - July 31, 2000. Transfer to OSO14 (Rainer Dombrowsky).**

F12. Allow More Precipitation Forms in Surface Observations

DISCUSSION: The current version of ASOS software (version 2.40) does not allow for augmentation of the following phenomena: -DZ, +DZ, -PE, +PE, -FZDZ, +FZDZ, IC, +SG, -SG, and SG. This has resulted in a degradation in the quality of augmented ASOS observations. For example, if “drizzle” is observed at an augmented site, it often goes unreported unless the observer feels that it is heavy enough to be considered “light rain.” Similarly, freezing drizzle often goes unreported unless it is deemed significant enough to be carried as “light freezing rain.”

Especially in this modern day of advanced technology, it is unscientific to use less precision than the state-of-the-art in reporting surface weather conditions. Taxpayers are not getting their money's worth when we deliberately chose the “lowest common denominator” in our reporting standards.

RECOMMENDATION: ASOS software should be changed to allow the mention of ANY valid type of present weather that is observed, especially the aforementioned elements.

RESPONSE 1997: Included in software version 2.5 will be the implementation of a Request for Change allowing observers to manually enter the following additional parameters which are not presently valid entries on the ASOS system: SS, +SS, DS, +DS, BLDU, BLSA, SA, DU, occurrences of TS with same, and occurrences of same in vicinity of station (VC). Also, intensities of DZ, PE and FZDZ will be allowed, i.e., -DZ, +DZ, -PE, +PE, -FZDZ, and +FZDZ. In addition, visibility increments of 1/8SM, 1/16SM and 0SM will be valid entries. IC and SG were not included on this list due to lack of initial support by the FAA. They may be included by approval of a request for change enhancement process. It should be noted that changing ASOS by allowing these additional parameters is not a simple adjustment to the allowable entry field. Each new word requires additions to the automated voice technology, requiring recording, software integration and hardware (memory) support.

FOLLOW-UP 1998: This change is included in the current software load (now called 2.6) currently undergoing testing for release.

FOLLOW-UP 1999: No further updates necessary. Version 2.60 software load will be deployed by September 2000 (4th Quarter) **Closed. Transfer to OSO14 (Rainer Dombrowsky).**

F13. Bogus Precipitation in the ASOS 6 and 7 Groups

DISCUSSION: ASOS currently accumulates bogus .01 precipitation amounts during periods when no precipitation has occurred. This has resulted in PVD being dropped from the AEV statistics and a recommendation has been made to drop BOS as well from these statistics. All future MOS historical updates should also not use the contaminated data base.

RECOMMENDATION: It is clear to everyone that ASOS could resolve part of its bogus .01 events by checking for a PCPN began/end in the hour of the event. The algorithm could then delete .01 from the report, 6 and 7 groups, and ensure a cleaner climatological, MOS and verification database.

RESPONSE 1997: While the long-term solution remains the all-weather precipitation gage, a shorter term solution may be to remotely edit (local quality control) this deficiency. The ASOS Program Office and Office of Meteorology are presently investigating this effort. The problem with implementing an algorithm, such as that suggested, is there may be problems until the algorithm is fully tested. In the case here, days with sustained drizzle would foil the algorithm and create a new set of problems.

FOLLOW-UP 1998: A proposed approach from OM for remote editing of climate information in ASOS has undergone review/coordination with the OSO and has been sent to the regions for coordination/approval. If approach is agreed upon, RC will be generated and change will be incorporated into the next software load (2.7). Algorithm work continues in OSO for a specific solution to the “false tip” problem.

FOLLOW-UP 1999: ASOS Build 2.8. **Target - July 31, 2000. Transfer to OSO14 (Rainer Dombrowsky).**

F14. ASOS Winds

DISCUSSION: ASOS winds can be significantly lower than other wind equipment. (From side-by-side comparisons in Montana.) Pilots are interested in the instantaneous cross wind, not the averaged wind. This difference could also affect local wind climatology.

RECOMMENDATION: Change ASOS software to use an instantaneous wind or at least a one second average.

RESPONSE 1996: A change from a 5- to a 3-second average would require an OFCM approval. The NWS will pursue a change to a 3-second average once an ice-free wind sensor is operational. This process will likely take 2 to 3 years. Until that process is complete, the forecasters must be aware that peak gusts are measured differently and may produce lower wind values, which may not reflect representative damage.

FOLLOW-UP 1997: The NWS has recommended a change to 3-second averaging proceed. Presently, there is a request to the RDs and Office Directors inquiring about resources to complement the change as well as a request to NCDC to comment on the impact of such a change to data continuity and archival. After this information is analyzed by senior management, the recommendation to change to 3 seconds would proceed to the OFCM Working Group on Surface Observations. If approved, the change would proceed to the Commission for Basic Systems (CBS) for implementation, where the international standard is established.

FOLLOW-UP 1998: In a meeting with the NWS Deputy Director in 1997, the NWS has recommended that while it supports the meteorological basis for this change, a decision to proceed with this action would have to await a review by the ASOS Program Office to determine the resource implications and technical ramifications resulting from this change. At this time, the ASOS Program has developed and implemented a test plan for comparing 5- to 3-second winds.

FOLLOW-UP 1999: The ASOS Program Office is scheduled to implement the 3-second average for peak wind speed with deployment of the Ice-Free Wind Sensor. **Target - June 30, 2002. Transfer to OSO14 (Rainer Dombrowsky).**

F15. Move ASOS Keyboard Cursor with One Stroke

DISCUSSION: When editing an ASOS observation for correction, the cursor must be hit consecutively many times to get to the end of the observation line.

RECOMMENDATION: Reprogram ASOS so one keyboard key will move the cursor when it's held down, similar to editing on the Remote Terminal to AFOS (RTA) or other PC keyboards.

RESPONSE 1995: We agree and will submit an RC to effect this change. Due to the volume of upcoming trouble reports that need to be addressed and fixed, this user interface annoyance may not be addressed immediately.

FOLLOW-UP 1996: RC was submitted and approved by change management. The "Tab" key will be utilized to meet the requirement.

FOLLOW-UP 1997: Awaiting inclusion beyond version 2.5.

FOLLOW-UP 1998: Awaiting inclusion. ASOS Build 2.8.

FOLLOW-UP 1999: ASOS Build 2.8. **Target - July 31, 2000. Transfer to OSO14 (Rainer Dombrowsky).**

F16. Modify ASOS Editing

Editor's Note: This item was listed under OM23 in 1994.

RECOMMENDATION: Modify the ASOS edit mode to allow an observer to enter the dry and wet bulb values when the ASOS temperature sensor is turned off.

RESPONSE 1994: OM22 will prepare an RC for change management.

FOLLOW-UP 1995: The RC for dry bulb/wet bulb separate entry and computation was submitted and approved by the Special Review Group and Change Management.

FOLLOW-UP 1996: Implementation should occur within 1 to 2 years.

FOLLOW-UP 1997: Awaiting inclusion beyond version 2.5.

FOLLOW-UP 1998: Awaiting inclusion. ASOS Build 2.8.

FOLLOW-UP 1999: Due to inclusion of “urgent” changes such as ice accretion in 2.8, this has been “deferred.” OM has been asked to validate requirement. We ask that DACFO review the RC and ensure its currency and validity.

DACFO RESPONSE: Since the ASOS already allows the manual entry of temperature and dew point data, this item is closed. **CLOSED (Joanne Swanson).**

OFFICE OF HYDROLOGY (OH)

Hydrology - New Items

1. Input Data Into the NWSRFS System Input to NWSRFS

DISCUSSION: The NWSRFS system is a complex program. A program should be developed which prompts the user to input new data or modify existing data automatically. This would allow the forecaster to focus on the hydrology the basin/segment rather than how NWSRFS works internally. This would also eliminate errors made in NWSRFS file format. It is understood that this would be a very time intensive program to develop, but the future benefits would far outweigh the initial time and resources invested.

RECOMMENDATION: A program needs to be developed for NWSRFS which prompts the user to input new data or modify existing data and then run all appropriate programs automatically.

RESPONSE 1999: There is an ongoing effort to enhance NWSRFS, based on scientific advances and field forecaster requests. These requests for enhancements go directly to NWSRFS support and development groups in the Hydrologic Research Laboratory (HRL). Elements of the above request are planned to be included in NWSRFS field enhancements for Integrated Hydrologic Forecast System (IHFS). The remaining aspects of this request have been provided to HRL development team for Build 6.0. **Target - June 30, 2002 (Roger Pierce).**

2. Various Maintenance, Travel, and Other Associated Responsibilities

DISCUSSION: WFOs need to allow hydro focal points more time to handle all their associated responsibilities, including time and travel monies to get out into the field to go over their hydro networks, identify needed gage sites, maintenance of E-19s and E-19As, and coordination with observers at non-automated sites.

The OML which covers their responsibilities establishes the minimum amount of time they must spend performing their met responsibilities, i.e., forecast shifts. However, it does not specify the minimum amount of time they must have available to carry out their hydro focal responsibilities. Focal shifts may be scheduled, but canceled when a scheduled forecaster calls in sick.

RECOMMENDATION: MICs need to ensure that adequate time is allowed for hydro focal point to carry out their responsibilities, including time in the field. It is recommended that either (a) clear direction be given to MICs in this matter, or (b) the appropriate ROMLs be changed to specify the minimum amount of time which will be allocated to carry out the hydro focal point responsibilities.

RESPONSE 1999: Office of Hydrology is aware of resource allocation problems associated with Senior Service Hydrologist, Service Hydrologist (SH), and Hydrologic Focal Point positions in forecast offices to serve the Hydrologic Service Areas (HSA). OH has worked on the SH position description and is undergoing a process of developing the Professional Development Series (PDS) in an attempt to assist in better defining the work areas and those things associated with HSAs. OH looks forward to working with and supporting DACFO on these issues, recognizing, as stated in part "b" of the recommendation, this is also a regional issue. **PDS Target - November 30, 1999 (Roger Pierce).**

UPDATE DECEMBER 1999: DOC personnel is reviewing the Service Hydrologist Position Description but no date has been set for completion of review. **Keep it OPEN until DOC completes the review. (Roger Pierce).**

3. Segmentation of River Flood Products

DISCUSSION: With the implementation of CRS and its requirement of having segmented type products to maximize its usefulness and reduce broadcast length, the current format of River Flood Warnings and Statements does not lend itself to accomplishing these objectives.

RECOMMENDATIONS: The time has come for River Flood Warnings and River Flood Statements to join the ranks of the other "long term" products by having them composed in a segmented manner. Segmentation would be related to the county that the individual forecast points reside in. Furthermore, this would necessitate a major revision to the Riverpro Application currently supported by Office of Hydrology, since implementation of a segmented statement/warning policy cannot occur without the proper modifications to the Riverpro Application on AWIPS.

RESPONSE 1999: AWIPS Build 5.2. **Target - September 2001 (Roger Pierce).**

4. Incorporate Various Displays and Other Automated Data for Multiple Uses

DISCUSSION: "Hydromet 4" incorporates and displays SNOTEL, RAWS and other automated data. These are very valuable forecaster verification and diagnosis tools given complex mountainous terrain of the Western Region.

RECOMMENDATION: Allow and develop similar capabilities on AWIPS particularly into the HYDROVIEW program selection #3 interface.

RESPONSE 1999: Closed (Roger Pierce).

5. National Flood Warning Category System

DISCUSSION: During a recent Flood of Record in Victoria, Texas, the public demonstrated some reluctance to evacuate. The Victoria Fire Chief, Mr. Vance Riley, sent a letter to our office (NWSO Corpus Christi) providing his thoughts on why the public was reluctant and outlining a plan which might reduce or eliminate this reluctance in the future. Chief Riley, in his attached letter, proposes adopting a “National Flood Warning Category System.” The NWS uses scales for other weather phenomenon such as hurricanes and tornadoes. Because of tremendous media “advertising,” the public understands a category 5 hurricane is more dangerous than a category 1. Unquestionably, all hurricanes threaten life and property; how the public responds ought to be our concern. The simple “category” system is the secret to evoking public response.

If we adopted Chief Riley’s proposal, we would “automatically” educate the public on appropriate levels of response during floods. This “automatic” education would come from firmly ingrained public paradigms and perceptions which identify weather events with a “5” rating as much more threatening than “1” rated events.

RECOMMENDATION: We should give Chief Riley’s proposal careful consideration. With the NWS testing a similar “category” system for winter storms, it is instinctive for us to integrate his scheme into our Hydrology Program. After the proper education of our customers, we could have RiverPro automatically include the flood category in Flood Warnings and Flood Statements.

Letter from Victoria, TX Fire Chief, dated 11/2/98, edited by DACFO using bold, italics type:

I respectfully make a recommendation to the National Weather Service to create a National Flood Warning Category System. We recently saw many problems here in Victoria convincing the public about the dangers of the floods. ‘Flood Stage’, ‘crests’ and flood warnings seem to have little impact. I believe that this is due to public perception.

I am proposing the following National Flood Warning Categories (Victoria Scale):

CATEGORY	DESCRIPTION
1	Rivers, creeks and streams may go out of banks. Minor lowland flooding. Deaths and injuries unlikely. (<i>analogous to current NWS designation of ‘minor’ flooding</i>)
2	Rivers, creeks and streams will go out of banks. Major lowland flooding. Injuries possible. (<i>for certain rivers or creeks; analogous to NWS designation of ‘moderate’ flooding</i>)
3	Rivers, creeks and streams will go out of banks. Damage to buildings, structures, and agriculture very likely. (<i>for certain rivers or creeks</i>). Injuries very possible. (<i>for certain rivers or creeks; analogous to NWS designation of ‘major’ flooding</i>)
4	Rivers, creeks and streams out of their banks. Damage to property, agriculture is probable. Deaths and injuries probable. (<i>for certain rivers or creeks; analogous to ‘near-record’ flooding</i>)
5	Rivers, creeks and streams out of their banks. Large volumes of water or severe flash flooding expected. Deaths and injuries very likely. Very dangerous flood! (<i>analogous to ‘record flooding’</i>)

Most citizens readily identify with a hurricane category 5 as being very dangerous and a category 1 as being the weakest form of hurricane. Most citizens readily understand the 1-5 scale for tornadoes as well. Perhaps if we do the same with floods, then citizens may take better heed of warnings.

This scale would be addressed to a specific stream, creek or river. For example, "The National Weather Service has issued a River Flood Warning for the Guadalupe River below Cuero. This will be a Category 2 (Victoria Scale) Flood. Use extreme caution in flood prone areas. Move livestock to higher ground..."

I am certain that categorizing floods will make people listen better, particularly in areas with histories of routine flooding without serious life and property damage. The Category descriptions need a lot of work and I would be willing to work with folks from around the country to make it better. I hope that NOAA will consider a numbering system like this. It may need to (be) broken into two groups — Flood and Flash Flood. If you have any questions, please do not hesitate to contact me. Thank you for your time and cooperation.

Sincerely,

Vance L. Riley
Fire Chief, EMT-P

RESPONSE 1999: A flood "category" system is already in existence. We will make a greater effort in the future to advertise and provide greater support for this system. This system has been around for a number of years with floods being described as minor, moderate, major and record/near record. Undertaking a project to rate floods differently than today's system will take considerable research and thinking as to how this system could be changed to truly provide enhancement. Floods are extremely dependent upon individual river locations. In addition, the decision as to rate the flood based on depth alone or damage assessment will be another difficult challenge as was found when attempting to make changes to the Saffer-Simpson Scale for Hurricanes not long ago, as attempts were made to relate storm strength and damages.

The Office of Hydrology understands the interest in providing this type of information, but complete categorization and national implementation will be a difficult process. We will form a team of Hydrologists and Services Specialists both in and outside of the NWS to give the concept careful consideration. Target - November 30, 1999 (Roger Pierce).

UPDATE DECEMBER 1999: The Office of Hydrology discussed this issue with various organizations in and outside the National Weather Service and government. They concluded at the Hurricane Conference, December 5-10, 1999, by a team of scientists that a Flood Warning Category System would be very difficult and confusing to develop.

The existing descriptive categories will continue to be used for its original design. Additional outreach activities are planned to provide additional information on the existing flood category system. **Temporarily closed until an acceptable solution is found (Roger Pierce).**

Hydrology - Follow-Up Items

F1. Rescind WSOM E-11

DISCUSSION: WSOM E-11 is grossly out of date. Employees following the directives of this chapter would endanger lives and cast a bad light on the agency.

RECOMMENDATION: WSOM E-11 should be rescinded immediately pending a total rewrite of the chapter. Rescission would have no impact operationally as no one follows this chapter anyway. Rescission would relieve the employees of the threat of negligence should this chapter be a factor in litigation.

RESPONSE 1997: OH concurs with the need to rescind this and other outdated chapters in WSOM Part E. The current plan is to achieve this by reorganizing and re-writing WSOM Part E during the next 12 months.

FOLLOW-UP 1998: The Office of Hydrology will initiate the process to rescind WSOM E-11 forthwith as part of the process of implementing the new structure for WSOM Part E as described in "Hydrometeorological Service Operations for the 1990's," page 4-8. The WSOM Part E revision process has proceeded slowly during the past year due to staffing constraints and diversion of staff efforts to replace the old correspondence course. However, progress will occur this year since a consensus approach to key chapters (E-11, RFC Operations, and E-21, WFO Hydrologic Operations) has been developed by the regional Hydrologic Services Divisions, new staff will soon be added to the Office of Hydrology to assist in the policy area, and WSOM chapters must be updated within a year for AWIPS commissioning.

FOLLOW-UP 1999: Updates to chapters E-11 and E-21 were signed by Director Kelly in June 1999 and will soon be published for distribution. **CLOSED (Roger Pierce).**

F2. Clarification and Standardization of NWS Hydrologic Products

Editor's Note: This item appeared in previous years' reports as two separate items.

DISCUSSION: During and after the heavy rains and associated flooding in the Central U.S. in the summer of 1993, it became apparent that there was a need for a better understanding of the various flood products. NWS personnel had trouble choosing the correct product for each flood event, and continuity was lost. Current instructions on these products leave a lot of room for interpretation.

RECOMMENDATION: Rewrite appropriate sections of WSOM Section E to clarify the differences among products. Provide instructions, with examples, of which products to use in various situations. Explore the consolidation and/or elimination of products. Standardize the products issued and used by all NWS offices. Offices that interact with several RFCs must deal with too many variations.

RESPONSE 1995: OH will completely update and revise the structure of WSOM Part E. Information on products will be distributed into three chapters: (1) RFC Products and Services, (2) WFO Hydrologic Products and Services, and (3) National Hydrologic Products. This effort will address the necessity of product consistency.

FOLLOW-UP 1996: One of the techniques being developed to support the hydrology program at the WFO is a river product formatter. The river product formatter, which will be implemented as part of AWIPS, employs current NWS policies when determining which product (RVS, FLW, FLS) to create. This level of automation should help clarify which product needs to be issued when. A second part to this issue is the updating of policy (i.e., WSOM Part E) to reflect the changes in the technology.

FOLLOW-UP 1997: Product standardization will be achieved through two general efforts: (1) Complete revision of WSOM Part E, specifically E-12 (RFC Products and Services) and E-22 (WFO Hydrologic Products and Services); and (2) Nationwide implementation of the WFO Hydrologic Forecast System (WHFS) and NWSRFS Interactive Forecast Program. The latter facilitates product standardization by providing the same product formatters to each WFO and RFC AWIPS.

FOLLOW-UP 1998: As the original recommendation for this item reads, the real need is in the policy area—specifically, WSOM Part E needs to be updated to provide clearer guidance on hydrologic product issuance.

As implementation of the AWIPS WFO Hydrologic Forecast System accelerates in the field, some standardization is provided to forecasters by the software. However, this does not affect the products coming out of the RFCs. OH will provide general policy guidelines to create some product consistency through the WSOM Part E update process, but product standardization is ultimately a regional issue, since product formats tend to evolve in the field offices over a number of years based on customer needs.

FOLLOW-UP 1999: New chapters E-12, 22 and 32 will provide clear guidance on the above and related issues.

UPDATE DECEMBER 1999: The process of developing policy chapters is being reviewed. A customer service workshop is planned for early calendar year 2000. Policy chapters E-22 and E-32 to be revised after this workshop. **Target MAY 31, 2000 (Roger Pierce).**

OFFICE OF SYSTEMS DEVELOPMENT

TECHNIQUES DEVELOPMENT LABORATORY (OSD2)

Technical/Software Support - New Items

1. Technical and Computer Applications Support

DISCUSSION: It often seems that offices in various regions “reinvent the wheel” to solve technical/computer programming problems. Many times different offices have similar problems, but they solve them in different ways, without the knowledge previously gained by another office. These parallel efforts seem to be a waste of NWS staff time and money. Furthermore, when a skilled NWS employee develops a useful computer program, it seems to take a long time for these ideas to get passed between offices. This is particularly true across regional boundaries.

With more reliance upon computers and associated applications, including the implementation of AWIPS, there will be an even greater need for technical support on a larger, national level to support computer applications in the field.

RECOMMENDATION: The NWS could greatly use a unit of Technical Support/Computer “Programming Experts” to serve field offices. The main mission of the “Programming Expert” unit would be to:

- receive input from the field offices on local problems,
- work pro-actively on programs the NWS would need in the near future,
- help field personnel resolve local programming problems, and
- coordinate solutions to frequently found problems through some media like cc:mail bulletins, or regular monthly newsletters sent out to the field.

This unit could operate daytime/part-time as a pilot program, or perhaps full time similar to the WSR-88D hotline. Full time operation would be the optimum, due to different time zones and operational rotational shift schedule.

RESPONSE 1999: TDL agrees that the NWS could use a unit of Technical Support/Computer Programming Experts to provide technical support to the field offices concerning local software development. That is why TDL has established the Local Applications List Server and Local Applications Development Web Page. The Local Application List Server provides the field offices with a convenient way to ask development questions of the AWIPS software developers and the Software Engineering Working Group. TDL coordinates the official resolution to the programmer’s questions and posts the answer on the List Server and adds it to the Frequently

Asked Questions (FAQ) of the TDL Local Applications Web Page. Both the list server and Web page are accessible to all field sites and development organizations. The turn-around time on answering programmer questions is usually a day or two. Because these questions usually are not time critical, a full time response team is not seen necessary at this time.

In addition to the list server and Web page, TDL established the Local Applications Working Group (LAWG) in December 1998. The LAWG consists of members from each regional and development organization. Part of their charter is to coordinate the development of new local and regional applications in an effort to prevent numerous offices from solving the same problem in different ways and to identify common ways to address local software development issues such as the development of APIs to access key pieces of often used data.

Establish Local Application List Server and Webpage: Completed (Harry Lebowitz).
Resolution of issues and updates to FAQ: Continuous (Ed Mandel).

2. Application Computer Programs in Field Offices

DISCUSSION: Numerous computer programs are developed by field personnel and distributed regionally and nationally. Some examples include SRWARN, MAPSO, WISE II, and a host of lesser known local programs. Many of the programs offer unique solutions or superior methods of solving problems. However, they naturally fall well short of programs developed by professional programmers or commercial software developers. Often, there is considerable duplication of effort by individual offices trying to solve the same problem, with several similar programs available. Program documentation and support are minimal with continued development or improvement of the software lacking. It seems unthinkable that field personnel have better software to prepare and send e-mail than to prepare forecasts or issue warnings and statements. It is recognized that the advent of AWIPS will bring a revolution in the way we prepare and issue products. However, the development of local programs will continue for both AWIPS and PCs. Many of these programs will continue to be less than optimal solutions to problems faced by offices nationwide. Programs and software developed in the field need to be as professionally and fully developed as possible BEFORE implementation and distribution.

RECOMMENDATION: A software integration plan and full time software integration support team should be established. This would consist of both field representatives and professional computer programmers or software consultants. They would establish national guidelines for software applications and assist in fully developing and testing software from the field. As a centralized point for distribution of field developed software, duplication of effort would be reduced and unsupported or poorly developed programs eliminated.

RESPONSE 1999: TDL agrees that a software integration plan and software integration support should be provided to field sites. That is why TDL is preparing the AWIPS Local Application Management Plan and updating the Application Integration Framework Manual (AIFM). The management plan establishes a process for the development, testing, implementation, and maintenance of local applications. It describes local, regional, and NWS Headquarters

responsibilities and provides for additional testing and review of local applications that have a regional or national appeal. The AIFM provides guidelines to the field offices concerning the development and integration of local applications. It addresses development environment, coding standards, and application development guidelines. The later defines the boundaries of local application development to ensure that local application development does not affect the AWIPS system performance. In many cases, these are the same guidelines used by AWIPS developers. These guidelines are being prepared by AWIPS developers and PRC, with input from the Local Applications Work Group.

Preparing the AWIPS Local Application Management Plan: Completed and Closed (Ed Mandel).

Updating the Application Integration Framework Manual: Completed and Closed (Robert Morris).

Prepare Local Application Guidelines: Completed and Closed (Ray Moy).

Models/Guidance - New Item

3. Monitoring and Enhancement for the Extra-Tropical Surge Forecasts

DISCUSSION: Monitoring and enhancement program for the extra-tropical SURGE forecasts of the NGM MRPECS/AVN MRPSSE should be developed. Given that the NGM will probably not be run after April 2000, due to computer upgrades and time constraints on NGM code conversion, we may have a problem with proper utilization of the SURGE guidance. The case of January 9-10, 1997, displayed poor initialization of the surge guidance for the southern New England NOS surge locations. This incorrect initialization contributed to a significant underforecast of the surge, during one of the highest astronomical tide departures during 1997. This resulted in a missed Coastal Flood Warning.

RECOMMENDATIONS: (a) Produce BIAS statistics for the various NOS sites at the primary high/low tide forecast times or at 00z/06z/12z/18z, for both the NGM/AVN and for at least two model cycles prior to time zero. (b) Refine the model surge forecast to properly initialize with current departures at the various NOS sites. (c) Expand the surge forecast guidance database to incorporate a larger number of storms.

RESPONSE 1999: Tides frequently show a long-term departure from the predicted astronomical tide, with such departures not well understood. A portion of this departure may be due to abnormal ocean temperatures; part may be due to an atypical meteorological situation over a prolonged period of time (a short-term climatology); and part may be due to abnormal rainfall. Another possibility is that the gage is out of calibration. This discrepancy is not storm surge in the traditional sense. We've known of such departures for a long time. In our SLOSH model, we account for these differences by adjusting our initial water level.

We've looked into the case Boston is referring to in this DACFO item. For several days, the tide anomaly (the difference between the observed water level and the astronomical tide) was

approximately 0.5 ft, and accounted for much of the model's "error" at the Boston gage. We have since suggested to the Boston office that they make this adjustment manually. (It should be noted that the model does well on capturing the PEAK surge without this "correction," since it is meteorologically generated.) In this particular case, water levels were already large due to the spring tides that were occurring. A relatively small storm surge, coupled with the spring tide, led to coastal flooding.

TDL is looking into a way to provide this "correction/adjustment" on a routine basis, as part of our extratropical model output. Let me outline one method of doing this. First, we obtain water level departures from NOS. **Unverified** NOS tide data (along with the departure from the astronomical tide) now reside on an NWS Office of Hydrology server. There's also an NOS file available which provides monthly tide departures; however, they may lag by 2 months. (We'll need to test to see which is most useful. If we use the current data, the surges from recent events may contaminate the correction.) We'll FTP it to a file on our new IBM mainframe. This adjustment can then either be displayed as a part of the message for each station or a correction based on recent tide gage departures, to the current surge message for the tide gage sites. A long-term solution might be to do a MOS analysis of these data.

Part (c) of the recommendation is not feasible with existing resources. The MRPECS generated with the NGM is a statistical model, based on a perfect prog approach. This model was originally done for the old 7-layer PE model and has been converted several times since then. It is available only for 12 locations along the northeast coast. Since there is a foreseeable end to the NGM, it would appear that efforts could be better spent elsewhere. The MRPSSE is a numerical model, based on input from the AVN model. We've been computing statistics on this model, but those statistics would not be useful for determining the initial water anomaly for an upcoming event.

There are several changes we plan for the extratropical surge model in the near future as we move this model to NOAA's new IBM mainframe computer. We'll be replacing the winds that drive the model from current lowest sigma-level winds to the 10-m wind file. Also, for the spin-up portion of the model, we plan to use the 6-h analyses that are produced for the AVN, instead of the 12-h analyses we currently use. **Target June 1, 2000 (Wilson Shaffer).**

Models/Guidance - Follow-Up Items

F1. MOS Forecasts at Stations with New Equipment/Sitings

DISCUSSION: MOS temperature equations were based on readings derived from HO-60 and HO-83 at a particular location. However, the instrumentation and sighting of ASOS equipment has made MOS temperature output especially bad in some locales (including STL).

RECOMMENDATION: Rerun the MOS equations based on these new site locations and equipment.

RESPONSE 1997: We agree that the new observational equipment and siting have resulted in an apparent loss of skill in the MOS temperature forecasts. The equations which produce these forecasts were, of course, tuned to the older equipment and the original observational sites. However, because of the need to rewrite the entire MOS developmental software system for a Unix environment, we do not intend at this time to update the NGM-based MOS temperature forecast equations. Our current plans are to develop a complete set of MOS forecast equations from the Aviation (AVN) model. These equations will be used to produce a guidance package for forecast projections of 6 through 72 hours after the initial model times of 0000 and 1200 UTC. Once adequate AVN data have been collected, we will add a guidance package from the initial model times of 0600 and 1800 UTC. Guidance at these times will be available for projections through 54 hours. As far as is feasible with the current observational system, we will produce forecasts for all sensible weather elements required for public and aviation weather forecasts. Guidance will be generated for all stations having adequate reports in our database of hourly surface observations. This database includes sites in the contiguous United States, Alaska, Hawaii, and Puerto Rico. In addition to the AVN-based MOS forecast package, we intend to produce as much Eta-based MOS guidance as resources permit. We will begin development of Eta-based thunderstorm and severe thunderstorm guidance by the end of the summer of 1997. Additionally, we've recently completed development of Eta-based MOS equations to forecast maximum/minimum temperature and the probability of categories of precipitation amount for over 500 sites in the contiguous United States. Although these equations have not yet been implemented, the Eta-based MOS guidance could supplement the NGM-based MOS guidance. For the MRF-based MOS guidance, we intend to develop a new medium-range guidance package that will support public weather forecasts out to the 192-h projection. This guidance will be available for the same set of stations as used in the short-range guidance. Our target is to develop the AVN- and MRF-based MOS package by the middle of 1999. As the Eta-, AVN-, and MRF-based MOS developments proceed, observations based on the new recording systems and the observational locations will be incorporated into the developmental samples.

FOLLOW-UP 1998: TDL's plans are to develop a full suite of MOS guidance based on the Aviation (AVN) and Medium-Range Forecast (MRF) runs of the global spectral model, and a partial suite of MOS guidance based on the Eta model. The AVN- and MRF-based MOS packages will be available for stations in the contiguous United States, Alaska, Hawaii, and Puerto Rico. Initial implementation of the guidance is scheduled for mid-1999, with a complete set of guidance to be implemented by the end of 1999. At first, the AVN-based MOS guidance will be available only from the 0000 and 1200 UTC runs of the model; plans are to initiate development of guidance from the 0600 and 1800 UTC runs in 2000. The AVN-based guidance will be available for projections out to 72 hours; the MRF-based guidance will be available for projections out to 7 days.

Because of efforts to rewrite the software required for the MOS system, development of the Eta-based MOS package has been delayed. Current plans are to develop Eta-based MOS guidance for thunderstorms, severe thunderstorms, probability of precipitation, and probability of quantitative precipitation. Initially, guidance will be available only for sites in the contiguous United States. However, these plans could change in response to comments from the field. In

April 1998, the Office of Meteorology queried the regional headquarters' as to the forecast elements that need to be included in the statistical guidance packages. The preliminary results of this query indicated that the field desires a complete set of MOS from the Eta, Aviation, and MRF models for all possible stations.

FOLLOW-UP 1999: Development of a new AVN MOS package is underway for temperature, dew point, ceiling height, cloud amount, wind direction and speed, probability of thunderstorms and severe weather, precipitation type, probability of precipitation, and probability of precipitation amount. Current plans are to develop AVN MOS guidance from both the 0000 and 1200 UTC runs of the model. A partial AVN MOS guidance package will be implemented by November 1999, and a complete guidance package will be implemented by April 2000. The initial AVN MOS guidance will be analogous to the current NGM MOS guidance in terms of weather elements and forecast intervals with many of the forecasts being valid at 3-h intervals. AVN MOS guidance will, however, be for projections out to 72 hours after 0000 or 1200 UTC and will be generated for over 1000 stations in the contiguous United States, Alaska, Hawaii, and Puerto Rico. Plans are to add more weather elements, projections, and both 0600 and 1800 UTC cycle guidance in later implementations.

There are no plans currently to begin parallel development of a complete package of Eta-based MOS. Work is underway, however, to develop an Eta-based MOS system for predicting thunderstorms and severe weather. This Eta MOS system will complement an Eta-based trajectory model which is under development.

The MRF-based MOS package will also be revised substantially during the next 18 months. Development of new maximum/minimum temperature, probability of precipitation, and probability of precipitation amount equations for projections out to 192 hours after 0000 UTC are underway for the same stations included in the short-range package. Forecasts of other elements will be added, and the definitions of the wind, cloud, and snow predictands will be modified in accordance with NWS and external user requirements. **Target - April 30, 2000 (Paul Dallavalle).**

F2. MOS Development from the 29-km Meso Eta

DISCUSSION: The 1995 DACFO report response from TDL (OSD2) concerning development of MOS equations from new models (Text Item 19.2) states that there are "no plans to develop new MOS products from every model that NCEP implements" and "...once a model reaches a reasonable level of stability, we will develop partial guidance (from the ETA) for example...."

The 29-km ETA may well become the model of choice of field forecasters if it proves to be (in a subjective sense) at least as successful as the 48-km ETA has been. Forecasters are gradually steering away from the RAFS as their first model of choice.

However, the only full MOS guidance we have is from the RAFS. Having worked in TDL, I understand the need to acquire sufficient predictor and predictand data for effective MOS equations. That said, I believe future MOS developmental data should be archived from the 29-km ETA after a “settling down” period—perhaps as early as next cool season (October 1997).

RECOMMENDATION: Implement plans to develop “perfect prog” equations based on 29-km ETA data during the next two calendar years, and concurrently collect predictor data for future MOS development—hopefully before the turn of the century.

RESPONSE 1997: Our plans are to develop a complete package of guidance from the AVN model. However, we have been collecting predictor data from the “early” Eta since April 1994. As also mentioned in the first response, we have developed a partial MOS guidance package from this archive. The guidance awaits implementation. Our understanding is that the early Eta will be replaced by a version of the meso-Eta during the summer of 1997. We will continue to collect predictor data from the operational version of the Eta model and we will do as much development from those data as resources permit. We will not, however, develop “perfect prog” equations but will continue to modernize the MOS approach. We do not think that the “perfect prog” methodology is worth pursuing, given our limited resources of staff and time.

FOLLOW-UP 1998: In February 1998, changes were made to the “early” Eta run to make the model very similar to the 29-km Eta model. TDL continues to archive data from the “early” Eta model and is currently investigating the feasibility of archiving Eta model fields on a 40-km grid covering the contiguous United States and Alaska. As indicated previously, developmental plans for an Eta-based MOS package depend on field responses to the OM query and on available resources within TDL.

FOLLOW-UP 1999: As noted in the answer to F1, only thunderstorm and severe weather guidance are currently being developed from Eta model forecasts. As the AVN MOS development is completed, more resources within TDL will be shifted to development of an Eta MOS package. **CLOSED. In the future, this action will be tracked through item F1 which is the same.**

F3. Develop MOS Guidance for all TAF Stations

TAFs are prepared for over 500 airports around the United States but not all airports for which TAFs are prepared have NGM MOS guidance. As an example, TAFs are issued for the airports at Hyannis, MA (KHYA), and Manchester, NH (KMHT) but no NGM MOS guidance produced for these sites.

RECOMMENDATION: Develop NGM MOS guidance for all sites for which TAFs need to be issued in order to aid aviation forecasters in their preparation of those products. This would also help public zone forecasters.

RESPONSE 1997: As noted above, we will be developing MOS guidance for every site within the contiguous United States, Alaska, Hawaii, and Puerto Rico for which we have adequate data in our hourly observational database. The forecast equations will be based, however, on AVN and MRF model output and not on the NGM.

FOLLOW-UP 1998: The response for 1997 is still applicable. TDL checked the proposed set of sites to be included in the next generation of MOS guidance; guidance for both KHYA and KMHT will be available.

FOLLOW-UP 1999: The responses for 1997 and 1998 are still applicable. Both the AVN MOS and MRF MOS guidance packages will include information for KHYA and KMHT. In the future, we intend to update the AVN and MRF MOS guidance packages on a regular basis. In doing so, we will add stations after a suitable period of observational data becomes available.

CLOSED. In the future, this action will be tracked through item F1 which is the same.

OFFICE OF SYSTEMS OPERATIONS

CONFIGURATION MANAGEMENT SECTION (OSO113)

Configuration Management - Follow-Up Item

F1. Convert the OSO Handbook 5 Database to Informix

DISCUSSION: The NWS Location Identifier (NWSLI) Handbook 5 Station Identifier Request Form has had “county” as a required entry since at least May 1993. The OSO NWSLI Handbook 5 database server still does not output “county” in its report, however. Also, the variable length, multi-record format of the NWSLI report makes it difficult or impossible to directly import these data into a local database at the field office.

RECOMMENDATION: Convert the OSO Handbook 5 database to Informix. Include the “county” field in the output report. Also include an option to unload query results to pipe (*|*) delimited upload format so these records may be easily imported into a local database, such as Paradox or Informix. Allow both standard report and “unload” files to be transferred to remote computers at field offices via FTP.

RESPONSE 1997: The Office of Systems Operations plans to convert the National Weather Service Location Identifier (NWSLI) database from an outdated database management system (DBMS) to the ORACLE DBMS. One feature of the conversion effort is to design a Web-based interface which would allow users to view and download NWSLI data via the Internet. Data could be retrieved on any number of fields using a variety of criteria. Information could be downloaded in several data formats, including ASCII delimited, fixed width text, or a standard report format. Also available would be some standardized reports, such as listing of WFOs, stations for a county warning area, etc. Another feature being researched would allow graphical representations of stations using commercial off-the-shelf Geographic Information Systems (GIS) software. Long-term plans include replacing the Station Identifier (SID) request process with an on-line and Web-based version of the form. Questions regarding this project should be directed to Larry Tyminski, Chief, Configuration Management Section, 301-713-1892, Ext. 136.

FOLLOW-UP 1998: The NWSLI migration to the Oracle database is now in the second phase of a planned four phase implementation. Phase one of the project, migrating the NWSLI tables to Oracle, was completed in January 1998. Phase two, designing and implementing an Internet-based user interface, was completed April 1998. The new user interface is designed to provide the field with an easy to use system for browsing, printing, and downloading NWSLI data. One major change from the old user interface is the prominent featuring of the county field. Users can generate queries based on the WFO (which is based on counties and states), and all reports feature the county in their output. Phases three and four, the development of an on-line maintenance interface for both HQ and field use, will begin early in 1999. Phase three is scheduled for implementation on July 1, 1999, and phase four is scheduled for implementation

on September 30, 1999. OSO113 will be working closely with the regions and field offices in this effort, soliciting requirements and suggestions for design. The NWSLI Web page can be accessed at: <http://cmhome.nws.noaa.gov>. New users will need to complete the registration form to obtain a user name and password. Questions should be directed to Michelle deTommaso, Chief, Configuration Management Section, 301-713-1892, Ext. 138. Current plan to convert to Oracle.

FOLLOW-UP 1999: The NWSLI migration to the Oracle database is now in phase 3 of a planned three-phase implementation. Originally, the NWSLI upgrade was scheduled for a four-phase implementation. Phases three and four, which are development of a maintenance interface (phase 3) and development of an on-line SID request form (phase 4), have been combined into a single development effort. Phase 1, converting the NWSLI data base to Oracle, was completed in January 1998. Phase 2, development of an on-line user interface, was completed in April 1998. Updates to the on-line user interface were completed in December 1998. Development of phase 3 and phase 4 modules is currently underway. Implementation is scheduled for September 30, 1999. The NWSLI Web page can be accessed at: <http://cmhome.nws.noaa.gov>. New users will need to register to be granted access to the site. Questions should be directed to Michelle deTommaso, Chief, Configuration Management Section, 301-713-1892 x138. **Closed (Michelle deTommaso).**

OFFICE OF SYSTEMS OPERATIONS
SYSTEMS EVALUATIONS BRANCH (OSO12)

NOAA Weather Radio - New Item

1. Console Replacement System (CRS) Voice

DISCUSSION: Some small radio stations rebroadcast NOAA Weather Radio programming directly. The quality of the synthesized voice is such that these stations are refusing to rebroadcast it. Consequently, the NWS is losing an important dissemination source for its products due to the poor quality of the CRS voice in many rural areas.

RECOMMENDATION: Make funding for an improved voice for CRS a priority.

RESPONSE 1999: The FY 2001 NWS budget submission to NOAA contained funding for implementation of a voice improvement program using concatenated human voice technology. It is our understanding NOAA approved this item and forwarded it to DOC. **Target September 30, 2001 (Jerry Stephens).**

OFFICE OF SYSTEMS OPERATIONS

OBSERVING SYSTEMS BRANCH (OSO14)

Surface Observations - New Items

1. Test the Davis Heated Rain Gauge

DISCUSSION: ASOS frozen water equivalency leaves much to be desired. It is well known that ASOS has considerable difficulty melting snow and sleet, thereby offering inaccurate water equivalents during the period of occurrence. This results in misleading and erroneous data for forecasters' use in real-time public forecast operations, as well as in the Model Output Statistics (MOS), verification, and climatology. The 1998 response to this issue mentioned testing alternative systems to solve this problem.

RECOMMENDATION: Test the DAVIS "HEATED" RAINGAGE alongside ASOS! I've confidence that the Davis can improve substantially upon the ASOS melting of snow and sleet into a reliably accurate water equivalent value. Please give an update to the status of replacing the current ASOS rain gauge.

RESPONSE 1999: The ASOS Program Office has been testing potential All Weather Precipitation Accumulation gauges for the past several years. Sensors under evaluation during the current winter test have shown more promise than in the past. If the final results from this winter's test are acceptable, we plan to proceed with full scale development/procurement of an all-weather gauge in the fall of 1999. This would allow fielding of the first gauges during late FY 2003. **CLOSED. The All-Weather Precipitation Accumulation Gauge is being tracked through OSO14, item F4 (Rainer Dombrowsky).**

2. "T" Group in METAR Observations

DISCUSSION: The largest National Weather Service customer base is the general public. The United States is not a metric country and our customers do not want temperatures in Celsius. Whenever we need to convey temperature data to the public or analyze observations for public forecasts, we need to think in terms of Fahrenheit temperatures, not Celsius.

Ideally, the temperature in the body of the METAR observation should be Fahrenheit. We did not use metric units for wind speed nor do we use metric units for visibility, which is the standard abroad, as the aviation community would not have stood for it. No one was apparently looking out for the best interest of NWS meteorologists when decisions concerning METAR coding were being formulated.

We question the wisdom and reasoning for ever instituting the T group as it is now coded.

RECOMMENDATION: Instead of having the METAR code for automated surface observations use a special group (the T group appended to the end of the observation) to convey the Celsius temperature and dew point to the tenth of a degree so we can convert it more accurately to Fahrenheit. The T group should simply be the Fahrenheit temperature and dew point.

RESPONSE 1999: The entry of temperature in Celsius is an aviation requirement coordinated between OM and the Office of the Federal Coordinator for Meteorological Services (OFCM) and the World Meteorological Organization (WMO). The METAR code is structured to use the same coding practices both in the body and remarks, i.e., temperatures in the body and remarks shall be coded and reported in Celsius. The tenth of a degree Celsius in remarks is required and necessary to properly convert to whole degrees Fahrenheit for climate purposes.

The “T” group was developed to meet a climate requirement submitted by NCDC. When the U.S. METAR code was in development, the NWS chairman to the AHG/FMH-1 brought to the attention of the other Federal agencies the reporting of temperatures in whole degrees Celsius would destroy the temperature climatology of the United States. Whole degrees Fahrenheit is the climate standard for the United States, thus the “T” group in remarks was developed to meet NCDC climate needs. It was suggested temperatures in the “T” group be reported in Fahrenheit. This recommendation was rejected by all agencies and the chairman of the WG/SO.

METAR code changes must be submitted to the responsible committee(s). **CLOSED. (Rainer Dombrowsky).**

3. Estimated Conditions in METAR Observations

DISCUSSION: There is a need to prefix estimated elements with an “E” when manual backup of ASOS observations are accomplished.

Recent extended communications outages during adverse weather at NWSO Midland resulted in manual backup to the ASOS data elements from the sensor pad. The Operator Interface Device (OID) functioned nominally. The observer edited the 1-minute screen with manually observed parameters including: wind speed, direction and gusts; visibility; present weather; sky condition; temperature and dew point; and hourly precipitation amounts.

The ASOS pressure sensors are collocated with the Acquisition Control Unit (ACU) in the office which provided altimeter setting, station pressure and sea level pressures.

We have an 8-inch universal rain gauge for hourly precipitation and a psychrometer for dry and wet bulb temperatures. We also have visibility markers for day and night distances and a wind sock. However, we lack a method with consistent accuracy to estimate ceiling heights. Gone are the days of ceiling balloons and ceiling lights.

It remains vital to aviation safety concerns that parameters of low ceiling heights along with surface wind conditions and perhaps other manually estimated elements be communicated with the system confidence indicated.

RECOMMENDATION: Future ASOS software should allow the observer at staffed sites to indicate that an observed parameter is "estimated" if a sensor is backed up manually. The capability to insert an "E" before the data element in a METAR observation with estimated conditions would suffice.

RESPONSE 1999: The METAR code does not allow for entry of "E" and no additional exceptions (Dr. Friday to WMO) to the METAR code shall be submitted to the WMO. Manual remarks can be entered explaining data is estimated if the observer so desires (ASOS or manual sites). ASOS is available 99 percent of the time and backup to ASOS is required only a small percentage of time. **CLOSED. (Rainer Dombrowsky).**

4. METAR Augmentation Code

DISCUSSION: [METAR augmentation code] Currently, there is no way to tell the level of augmentation in a METAR report. Even Flight Service Specialists complain that they often do not know to what extent a METAR report is augmented. It is a certainty that public METAR users are even less informed about augmentation. Considering the potential for misinterpretation by users of the METAR observation, this represents a clear risk to flight safety.

RECOMMENDATION: The level of augmentation needs to be hard coded in to the METAR report. This could be simply accomplished by inserting a code at the beginning of the report in place of AUTO. This would call immediate attention to briefers and pilots as to what to expect from the observation. Example: METAR KXXX 090356Z AUG# 03004KT, where # is the augmentation level a, b, or c.

RESPONSE 1999: The United States committed itself to the WMO by stating NO additional exceptions to the METAR code would be submitted. Adding AUG# to the METAR code is a significant code change and would be considered an exception. **CLOSED. (Rainer Dombrowsky).**

5. Daily ASOS Climatology

DISCUSSION: While NWS offices can locally correct the ASOS daily climatological reports (CLI), it is my understanding that these are not implemented by NCDC.

RECOMMENDATION: Please clarify this issue.

RESPONSE 1999: Locally produced CLI are not available to NCDC. Any errors in the ASOS data should be corrected by submission of weather service B-14, Notice of Correction to Weather Records. **CLOSED. (Rainer Dombrowsky).**

Follow-Up Items

F1. Cooperative Program Duties Not Getting Done

DISCUSSION: The cooperative program is the backbone of this Nation's climatological database. This valuable data is used in a multitude of ways, including research, litigation, energy management, design, construction, agricultural land management, water resource management, transportation, and recreation. This is one of the Nation's most cost-effective government sponsored programs.

However, this program is now in serious decline because the Cooperative Program Manager position has been eliminated in a number of offices. Instead, an HMT is now assigned to manage the cooperative program on a part-time basis, usually spending 40-50% of his time at this task. The rest of his time is spent performing normal HMT duties. Experience is showing that this program cannot be properly managed on a part-time basis.

RECOMMENDATION: Re-examine the workload required to properly maintain a viable cooperative observer program.

RESPONSE 1998: The former duties of the Cooperative Program Manager have been incorporated into the operations of the Weather Forecast Office. This permits the wider resources of the office to be employed to meet the program demands. Many offices have been very successful in maintaining the cooperative network and have accomplished this by utilizing at least three persons for field work and the rest of the staff to handle the paperwork. It requires a full office commitment to accomplish the task. How the task is managed remains the responsibility of the local managers but the goal remains the same—to provide the observations necessary to have accurate warnings and forecasts and describe the climate of the Nation.

The recent National Research Council (NRC) report, "Future of the National Weather Service Cooperative Observer Network," July 1998, stated that the staffing model needs to be adjusted for each WFO based on the number of cooperative stations assigned, the distances involved, and other operational factors. The NRC report concluded that each WFO should have an individual on staff who is the primary point of contact for cooperative observers. The NRC recommended that the DAPM should be the local manager and should be supported by an adequate number of HMTs to carry out the cooperative observer program responsibilities. This includes maintaining consistent personal contact with the volunteer observers. The NRC report also noted that in so much as the MIC sets priorities and influences work assignments, the attitudes of the staff will reflect the view of the MIC toward the cooperative observer program. It was therefore recommended that performance evaluation criteria be developed to encourage accountability.

The NRC findings, conclusions, and recommendations are taken seriously and are receiving high-level attention. A cooperative observer program evaluation element is being considered for inclusion in the performance plan of all MICs.

Workload reductions are expected with the planned automation of the process for the submission, central databasing, quality control, and external dissemination of the B-91 and B-44 forms to end users in a more timely and reliable manner. This activity is currently on hold due to lack of funding. We are exploring alternative funding options. We are using existing resources to automate the quality control and error-rate reporting process for the B-44 reports.

Editor's Note (3/31/99): Reviewing workload allocation under the MARD.

FOLLOW-UP 1999: The workload review proposed under the MARD is no longer being considered. The MARD as proposed will not take place. To minimize the workload of HMTs, OSO14x1 is working with NCDC in examining and developing automated quality control techniques. OSO14x1 has developed software that digitizes B-44 reports and checks for errors. We are examining the AWIPS Hydro database as a future platform for Data Entry, QC, and dissemination of COOP Metadata. **Target - June 30, 2001 (Rainer Dombrowsky).**

F2. Problems with the National Cooperative Observer Program

DISCUSSION: The National Cooperative Observing Program is crumbling before our eyes. The demise of both the quality and quantity of observations and climatological data rests with the ASOS augmentation contract, lack of additional automated measuring equipment where ASOS augmentation is not possible, and the removal of the cooperative program manager position. At the same time, our users locally and nationally are demanding the same observations and climate information from local offices and NCDC as before. Research, hydrological databases, and long-term water resource planning are only a few areas where the degraded quality of data is already having severe impacts.

HMT/Interns have not successfully filled the gap left by the cooperative program manager. Keeping the coop program alive and adding to the network to fill the gaps left by ASOS reporting requires more time and equipment management than the HMT/Intern staffing and scheduling allow.

The pride NWS employees have had in the long-term data record is quickly becoming unjustified.

RECOMMENDATION: Contract and fund additional ASOS augmentation and/or incorporate contract observers into the cooperative network via ROSA. Develop a viable short- and long-term plan for the resuscitation of the cooperative observer program.

RESPONSE 1998: The National Research Council (NRC) recently concluded a 1 ½ year evaluation of the NWS Cooperative Observer Network and published the results in a July 1998

report, "Future of the National Weather Service Cooperative Observer Network." A copy of this 65-page report was provided to each Regional Director, each Regional Systems Operations Division Chief, and each MIC. The aim of the report was to:

- (a) assess the applications of the COOP network;
- (b) assess the need to continue the COOP network;
- (c) assess the NWS plans to modernize the network, including the impact of interagency data requirements on NOAA's program responsibility for modernizing the COOP network; and
- (d) identify alternative approaches for improving the effectiveness and efficiency of the network through new technology or new organizational structures associated with NWS modernization.

The applications of the COOP network and the need to continue the COOP network are clear. The NOAA response to items (c) and (d) above is a 5-year, \$34 million plan to modernize the network. One initiative would provide for expanded electronic recovery of data in a near real-time mode (at least daily observations). Another would add electronics to the Fischer/Porter rain gauges to eliminate the tape punches, reduce maintenance, and eliminate paper tape handling. The current MMTS (Max/Min Temperature System) will have to be replaced since the technology of the system is obsolete. Preliminary plans for the new generation MMTS would eliminate cables, the need for grounding, have data storage and provide midnight-to-midnight maximum and minimum temperatures. There is also consideration of securing instrumentation that would fully automate the temperature and rainfall measurements of a few, select, long-term climate sites with records in excess of 50 years. This would prevent losing a major investment in a long historical record when an observer is no longer available. Both short-term and long-term plans are being put forward to strengthen and improve the network, and NOAA has stated in the NOAA Strategic Plan that modernization of the cooperative program is necessary.

The foundation of the cooperative network is the volunteer observers and should not be confused with the ASOS network and the attendant contract services for augmentation and backup. Contract observers are neither necessary nor cost effective for the cooperative program. Remember, the cooperative network has over 11,000 observers which makes it the largest observation network in the United States and within the National Weather Service. It can only exist because of the limited costs associated with a volunteer network of observers.

FOLLOW-UP 1999: \$13.9 million was approved for the new initiative by the Corporate Board for FY 2001-2003. Coordination with other line offices and agencies under auspices of OFCM has begun. OSO14x1 will work with the regions to update the existing Cooperative Observing Strategic Plan. **Target - September 30, 2003 (Rainer Dombrowsky).**

F3. ASOS Dew Points Near or Below 32°F

DISCUSSION: Dew points are unreliable near or below 32°F. This leads to erroneous RH readings in the hourly roundups, bad data in the regionalized ADAP programs and the inability to correctly assess wet-bulb cooling.

RECOMMENDATION: Increase the frequency of mirror-checks/heat resets. Add disclaimer to hourly roundups regarding dew point and RH.

RESPONSE 1998: The ASOS Hygrothermometer Working Group recommended that the ASOS hygrothermometer vendor, TSL, investigate a modification to the hygrothermometer operational firmware to address problems associated with mirror freezing and mirror contamination which contribute to unreliable dew point temperatures near or below 32 °F.

This firmware provides an entirely new approach to dew point measurement cycling. Rather than continuously holding the mirror at the dew point temperature, this modified firmware "cycles" dew point readings. This non-continuous approach to dew point measurements causes the hygrothermometer mirror to undergo a heat cycle immediately preceding the dew point temperature measurement. Taking dew point readings on a periodic (as opposed to continuous) basis will eliminate surface contaminants from adhering to the mirror surface due to a constantly wet mirror and will reduce mirror freeze-ups by causing a heat cycle to be performed immediately prior to measurement. The Engineering Design Branch has received this firmware and has performed laboratory evaluation of its performance. Testing at the Test and Evaluation Branch in Sterling, Virginia, will begin before the end of 1998. Initial deployment is scheduled for June 30, 2001 (Rainer Dombrowsky).

FOLLOW-UP 1999: The most recent version of the non-continuous dew point firmware was tested in a field environment at the NWS Test Facility in Sterling, VA. The testing proved unsuccessful and no further action is planned at this time.

The ASOS Program Office has awarded the initial contract for a replacement dew point sensor. Sensors from two vendors are being evaluated at the Sterling Test Facility this spring. We plan to down-select to a single vendor and proceed into the full scale development/procurement phase this summer. This would allow fielding of the first sensors during early FY02. **Target - December 31, 2001 (Rainer Dombrowsky).**

F4. ASOS Rain Gauge Failure During Freezing Rain and/or Snow

DISCUSSION: During winter, ASOS underestimates or fails to report precipitation amount in a timely manner due to freezing rain or snow sticking in the funnel of the rain gauge.

RECOMMENDATION: Address this issue.

RESPONSE 1998: The ASOS Heated Tipping Bucket was designed to accurately measure liquid precipitation. The ASOS Program Office is well aware of this limitation and has been aggressively pursuing an All-Weather Precipitation Accumulation Gauge (AWPAG). We have tested candidate gauges for the past two winter seasons and have additional tests planned for this upcoming winter season.

FOLLOW-UP 1999: The Planned Product Improvement Team briefed senior OSO, OM and OH officials on the results of the 1998-99 Winter Season testing of the AWPAG. Sensors under evaluation during the current winter test have shown more promise than in the past. If the final results from this winter's test are acceptable, we plan to proceed with full-scale development/procurement of an all-weather gauge in the fall of 1999. This would allow fielding of the first gauges during late FY 2003. **Target - September 30, 2003 (Rainer Dombrowsky).**

1. Test the Davis Heated Rain Gauge

DISCUSSION: ASOS frozen water equivalency leaves much to be desired. It is well known that ASOS has considerable difficulty melting snow and sleet, thereby offering inaccurate water equivalents during the period of occurrence. This results in misleading and erroneous data for forecasters' use in real-time public forecast operations, as well as in the Model Output Statistics (MOS), verification, and climatology. The 1998 response to this issue mentioned testing alternative systems to solve this problem.

RECOMMENDATION: Test the DAVIS "HEATED" RAINGAGE alongside ASOS! I've confidence that the Davis can improve substantially upon the ASOS melting of snow and sleet into a reliably accurate water equivalent value. Please give an update to the status of replacing the current ASOS rain gauge.

RESPONSE 1999: The ASOS Program Office has been testing potential All Weather Precipitation Accumulation gauges for the past several years. Sensors under evaluation during the current winter test have shown more promise than in the past. If the final results from this winter's test are acceptable, we plan to proceed with full scale development/procurement of an all-weather gauge in the fall of 1999. This would allow fielding of the first gauges during late FY 2003. **CLOSED. The All-Weather Precipitation Accumulation Gauge is being tracked through OSO14, item F4 (Rainer Dombrowsky).**

F5. Automated Snow Measurements

DISCUSSION: Snowfall measurements are lacking at many ASOS sites, all Remote Automated Weather Station (RAWS) sites, and other remote sites. Knowledge of actual snowfall amounts is critical in verifying winter weather warnings and advisories, as well as in maintaining accurate climate records. Accurate reports of snowfall amounts can also be included in statements and local storm reports, adding to forecast confidence and credibility.

RECOMMENDATION: Incorporate automated snow measuring technologies, such as snow pillows or acoustic measuring devices, into ASOS, RAWS, and other remote observation sites.

RESPONSE 1998: Current plans are to obtain snowfall accumulation using the existing LEDWI. An algorithm has been developed for this and is being evaluated. Final implementation

of this algorithm is contingent upon correction of the LEDWI lens blockage problem caused by heavy snow and high winds. A retrofit that should help alleviate this problem will be tested during the next winter season.

When implemented, this method will provide information on snow accumulation but not snow depth. Currently, there are no plans to implement a snow depth device.

Editor's Note 3/31/99: Pending further tests with a July 31, 1999, evaluation of using LEDWI to measure snowfall (Rainer Dombrowsky).

FOLLOW-UP 1999: *Automation of snow accumulation* — An algorithm to derive snow accumulation rate from the LEDWI “RAW” data has been developed and tested with results presented at the 1998 AMS IIPS Conference. The LEDWI low channel amplitude is highly correlated with the rate of snowfall. This permits minute-to-minute calculation of snow accumulation rate. Then cumulative values for hourly, 3 hourly, 6 hourly, or daily snow accumulation can be derived. The problem with this technique is that the LEDWI lens can become partially or totally blocked by snow, especially when accompanied by strong wind. Partial blockage will lead to unreliable results from the snow accumulation algorithm and total blockage will obviously suspend the calculation until the blockage clears. A variety of solutions to the blockage problem have been evaluated, but none has been sufficiently successful to recommend for a field upgrade. Implementation of the snow accumulation algorithm will not be likely until an effective blockage prevention strategy is demonstrated.

Automation of snow depth — Snow depth can be determined minute-to-minute by using a downward pointing ultrasonic rangefinder as reported at the 1993 SMOI Conference. Such devices, specifically designed for snow depth measurement, are commercially available. The primary problem is that when blowing and drifting of snow is occurring, it is unlikely that a point snow depth measurement will be representative of the areal average of snowfall. Snow fences can be used to protect an area from blowing and drifting, but in general, these are too large to be installed at a typical ASOS airport location. A formal requirement and associated funding would be required to implement such a sensor. **CLOSED. (Rainer Dombrowsky).**

F6. Incorrect Precipitation Reports at Temperatures Below Freezing

DISCUSSION: ASOS incorrectly reports precipitation at temperatures below 32°F. We've had clear cut cases in southern New England (re: November 14, 1997) when ASOS never reported sleet (ASOS cannot report sleet and drizzle. ASOS cannot report freezing rain at sites unequipped with the freezing rain sensors).

The ASOS will transmit the precipitation as light rain (R-), moderate rain (R) or heavy rain (R+). The highest priority weather element is reported when multiple precipitation types are occurring at one time, i.e., ASOS cannot report mixed precipitation.

The data sent to the public either via our NWS hourly roundups or possibly through the Weather Channel can be misleading, especially from the many non-augmented ASOS sites.

RECOMMENDATION: We need to have a clearly written disclaimer on nationwide NWS roundups that precipitation type may be erroneous at temperatures at or below 32°F.

RESPONSE 1998: As part of the Planned Product Improvement effort, the ASOS Program Office has been testing an enhanced precipitation identification sensor that would be capable of reporting both sleet and drizzle. This effort is still in the development stage. We anticipate fielding the new sensor to begin in the 2005 time frame. As an interim measure, we plan to implement a Blowing Snow algorithm into ASOS Build 2.6.

Editor's Note (3/31/99): This algorithm is expected to significantly improve the reporting of blowing snow and to identify sleet and other liquid/freezing precipitation as "undetermined precipitation."

FOLLOW-UP 1999: Release of ASOS v2.60 is delayed due to software problems. Since technology for an enhanced precipitation identifier is not yet mature, the ASOS Program Office plans to award a development contract in late FY 1999. Fielding of a new sensor is still anticipated to begin in the CY 2005 time frame. **Target (ASOS v2.60) - August 31, 1999 (Rainer Dombrowsky).**

UPDATE November 1999: Deployment of ASOS software version 2.60 began in early October and will continue into the early Summer of CY 2000. Version 2.60 contains the capability for accurately detecting and reporting light freezing precipitation. The reporting of sleet, ice pellets and hail can only be addressed through the fielding of a mature enhanced precipitation identifier. The recent testing of two candidate systems proved the technology remains immature. **Target July 31, 2000 (Rainer Dombrowsky).**

F7. ASOS Precipitation Groups

DISCUSSION: ASOS uses the hourly "PCPN-group" to calculate and code the 24-hour "7-group;" however, the "7-group" often does not agree with the sum of the 6-hourly "6 groups." During heavy rain events, additional rain may fall between the times that "6-group" is encoded and the "PCPN-group" is appended to the observation. The result is that the "PCPN-group" total is greater than the sum of the four "6-groups."

RECOMMENDATION: Change the precipitation algorithm to routinely check that the "6-, 7- and PCPN-groups" are consistent.

RESPONSE 1996: All proposed changes to ASOS firmware will be prioritized and scheduled for future loads in the summer of 1996. The prioritization will dictate in which future load specific changes will be incorporated. ASOS firmware version 2.5 (next major firmware load) is

tentatively being planned for release in spring 1997. This particular issue will be fixed in ASOS Version 2.5 firmware.

FOLLOW-UP 1997: The fix for this problem will be operative in the ASOS Version 2.5 firmware. The planned release of this firmware is now expected for the end of the calendar year 1997.

FOLLOW-UP 1998: ASOS software upgrade Version 2.60 will implement fixes that will ensure agreement between the “Pxxxx”, “6xxxx”, and “7xxxx” groups.

FOLLOW-UP 1999: Software version 2.60 delayed due to software problems. **Target - August 31, 1999 (Rainer Dombrowsky).**

UPDATE November 1999: Deployment of ASOS software version 2.60 began in early October and will continue into June CY 2000. The change to revise processing timing has been integrated in v2.60 to ensure agreement of precipitation remarks. **Target June 30, 2000 (Rainer Dombrowsky).**

F8. Shut Off ASOS Temperature and Dew Point Sensors Individually

RECOMMENDATION: Reprogram ASOS to allow temperature and dew point sensors to be shut off individually.

RESPONSE 1995: A request for change is already in process for separating these two elements. It is expected to be incorporated into ASOS software/firmware in 1996.

FOLLOW-UP 1996: All proposed changes to ASOS firmware will be prioritized and scheduled for future loads in the summer of 1996. The prioritization will dictate in which future load specific changes will be incorporated. ASOS firmware version 2.5 (next major firmware load) is tentatively being planned for release in spring 1997.

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F9. ASOS—Ragged Cloud Layers

DISCUSSION: The laser beam ceilometer often shows a ragged low cloud layer as being two or three distinct layers. As a result, the 1-minute display often fails to report substantially higher cloud layers above the ragged layer.

RECOMMENDATION: Allow ASOS to show only the lower part of a ragged layer.

RESPONSE 1994: Improved sky condition algorithm performance will be studied in the near future.

FOLLOW-UP 1995: Work will begin on the improved sky condition algorithm this spring.

FOLLOW-UP 1996: All proposed changes to ASOS firmware will be prioritized and scheduled for future loads in the summer of 1996. The prioritization will dictate in which future load specific changes will be incorporated. ASOS firmware version 2.5 (next major firmware load) is tentatively being planned for release in spring 1997. Work has begun on the improved sky condition algorithm, but the earliest it would be available for incorporation in a ASOS firmware version would be ASOS firmware version 2.5.

FOLLOW-UP 1997: This type of problem is scheduled for a fix beyond firmware version 2.6.

FOLLOW-UP 1998: Improvements to the sky condition algorithm are currently under study. Any changes to the algorithm are tentatively scheduled for version 3.0.

FOLLOW-UP 1999: Improvements to the sky condition algorithm are currently under study. Current efforts are aimed at improving the reporting of clouds below 100 feet. Potential changes to the algorithm would be implemented in version 3.0. **Target - September 30, 2002 (Rainer Dombrowsky).**

F10. SCD/SDO Data is Getting Little Use [Delete]

DISCUSSION: The supplementary data observation (SDO) seems to be a waste of everyone's time. Persons that would find the information contained in the SDO useful, namely pilots, do not receive it. I called the FSS in BOI and they knew nothing about this product. From my discussion with NCDC, they may archive the SDO. Are these snow depths getting plotted on the NMCGPHP0S graphic? Will the present weather and synoptic cloud types be incorporated into surface plots? Are they being transmitted to our clients who use Family of Services? Internally, the forecasters in our office seldom, if ever, use the SDO for writing the MSO TAF and find it cumbersome to look at several different products (METAR, SDO, SCD) for information that should be contained in one product. In brief, this product serves no apparent purpose at this time. NWS contract stations are not even tasked to take SDOs.

RECOMMENDATION: If the information in the SDO is important, then why not augment this information into the remarks section of the ASOS METAR/SPECI reports? This may cause the observer to be more cognizant of the current weather conditions, but if the SDO is to be accomplished as stated in the WSOH #7, the observer must remain cognizant of current conditions anyway. A substantial amount of information carried in the SDO deals with aircraft safety. For those sites co-located, why don't we include it in the METAR observation? If it is not that important, why do it? The supplementary climate data observations (SCD) could be expanded to include the hail size and snow increasing remarks.

OM22 RESPONSE 1997:

(a) The SCD/SDO products have been evaluated by the FAA and deemed to be of too little value for their dissemination. We conducted a test through our NWS communications center prior to their implementation to ensure their receipt and throughput by FAA communications; however, the FAA chose not to use them internally. Therefore, the SCD/SDO primarily support the NWS warning and forecast mission as well as the essential climatological requirement coordinated with the climatological community in the early 90s. Through implementation, our endeavor was not to task observers with entering identical information in two places. Hail size and SNOINCR remarks are considered event-driven events, and therefore reported in the SDO rather than the SCD. Again, our endeavor, motivated by field input, was to have all information reported once in one report. (Further inquiries on the SCD/SDO report status should be directed to OSO14.)

(b) The OM will coordinate with OSO in developing an assessment plan to send to the regions in FY 97 on the Supplementary Data Program. This assessment will provide the framework on recommendations on whether to continue or modify this program to best support forecast operations.

OSO14 FOLLOW-UP 1998: The SCD/SDO assessment program is ongoing at WSH. OSO and OM are continuing to review the requirements for the SCD/SDO program through surveys of the regions, field offices, centers and climatological interests. Both NCDC and NCEP are increasing the utilization of the SCD observations and have recently stated that the data is valuable and reliable. NCEP is plotting the snow depth data from the SCDs, and NCDC is including SCD data in some LCDs and will continue to increase the availability of this data through expanded databases on the Internet. OM currently is conducting a survey with the NWS regions to determine if additional SCD observations can be included in ASOS LCDs from WFOs which are close to the ASOS site (within about 10 miles) and the SCD information (snow depth, sunshine duration, etc.) is deemed by that WFO to be representative of the ASOS location.

The utility of SDO data is being reviewed by WSH. Many have suggested that the SDO data is no longer required and that the information can be supplied through alternative formats. The SDO data is mainly provided to support the NWS warning and forecast program as well as other users that access the SDO data in real-time. SDO data is being made available through the Family of Services.

Any changes to the SDO/SCD program would be implemented upon completion of the current review. An OML would be issued to implement policy changes, with procedural changes reflected in NWS Observing Handbook No 7, Part IV.

FOLLOW-UP 1999: The NWS is committed to providing the SDOs as part of the modernization/certification process. This commitment was published in the Federal Register and must remain in effect until the process is complete. **CLOSED (Rainer Dombrowsky).**

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OFFICE OF SYSTEMS OPERATIONS

TELECOMMUNICATIONS AND DISSEMINATION BRANCH

(OSO15)

Surface Observations - Follow-Up Item

F1. Accessibility of ASOS Phone Lines to WFOs

Note: This item was listed under OSO14 (Surface Observations Section) in 1998.

NWS personnel routinely call one or more ASOS sites in their area of responsibility for various purposes, e.g., climate reports, media inquiries, or observing real-time conditions as a thunderstorm passes overhead. Frequently, the modem phone lines to ASOS are busy, and sometimes the lines stay busy for several hours straight. Climatological reports that are issued several times daily require input that can only be derived by calling ASOS, and a busy ASOS line will necessarily delay those reports. The busy ASOS lines are sometimes caused by too many users having access to the system. The busy phone lines could be a real hindrance to effective operations or just an embarrassment when media personnel call up needing the most current weather information.

RECOMMENDATION: Install a dedicated phone line for each ASOS that is strictly for use by the NWS. NWS should have special priority to the ASOS sites that are funded by the NWS. This would ensure that NWS users do not have to wait for other users to get off a phone line.

RESPONSE 1998: Presently, ASOS has two primary remote data access ports through which a user may review and/or download ASOS site database information. One data access port was to be used as dedicated access for the NWS ASOS maintenance technicians (although the same phone number will allow any user to access either of the two data user ports). The second data access port was to be used primarily by NCDC to download ASOS data for the purpose of obtaining climatic data for use by NCDC. The second port's secondary use was for other (the remaining remote data access users) requestors of data. Examples of this are the NWSFOs and NWSOs; universities for research; Federal, state, and county agencies; and private companies.

The proposed technical solutions have not been studied, and it would take some time for all the factors, such as practicability, cost, and ASOS capability, to be studied and determined to be feasible. NWS will evaluate the policy of granting access to ASOS to outside users.

Editor's Note 4/7/99: This proposal is awaiting final NWS evaluation of operational, technical, and cost feasibility (estimated cost is close to \$200K for all NWS ASOS systems).

FOLLOW-UP 1999: Currently, there are three dial-up lines which afford access to aviation observation weather data at each of the 314 NWS ASOS sponsored sites. Network-wide addition of a fourth dial line at all sites would require additional funds of \$209K (estimated) for the first year and \$170K per year thereafter. The first year estimate includes \$39K for one-time installation charges. Implementation of this additional dial line requires approval by the ASOS Program Office and provision of necessary funding. OSO15 considers this item closed until these events occur. **CLOSED (Mike Sikorski, Floyd Williams).**

OFFICE OF SYSTEMS OPERATIONS

CENTRAL COMMUNICATIONS SOFTWARE BRANCH (OSO24)

Web Sites - New Item

1. URL Addressing

DISCUSSION: While the NWS is not in the business to compete with private weather dissemination, it is often a relied upon source of weather information to the public, media and other agencies via its individual Internet home pages. Confusion frequently results when the URLs to these sites are given, as they are generally a 30-character or more address.

RECOMMENDATION: The NWS should obtain a unique domain name, such as “nws,” that offices and branches can use for their Internet home pages. “HTTP://NWS/SAC” is much easier (and shorter) to give out than “http://www.nimbo.wrh.noaa.gov/Sacramento/index.html.”

RESPONSE 1999: Assignment of domain names are controlled by the General Services Administration in accordance with Federal Networking Council RFC 2146. Paragraph 1,c of RFC 2146 states “Subsidiary, non-autonomous components of top-level or other entities are not eligible for separate registration.” This effectively prohibits the NWS from acquiring a domain separate from the NOAA.GOV domain already in existence. The established parent domain for NWS-administered computer systems is NWS.NOAA.GOV. We, however, are not prohibited from applying for system identification within the NOAA.GOV domain (e.g., weather.noaa.gov).

System identification within a Uniform Resource Locator (URL), such as “http://www.nws.noaa.gov/index.html,” is a host name (versus a domain name). The host name incorporates the name of the domain in which the host resides. Host names must be unique to a single computer system on an Internet. The same host name cannot be assigned to multiple systems.

As an alternative proposal to the recommendation, the Internet Services Group of OSO24 is willing to configure either of the servers “www.nws.noaa.gov” or “weather.noaa.gov” to act as an entry server for other NWS HTTP servers. Specific URLs referencing one of these servers would be redirected to the server that actually contains the information. For example, the “weather.noaa.gov” server could be configured to redirect the URL “http://weather.noaa.gov/Sacramento” to “http://www.nimbo.wrh.noaa.gov/Sacramento/index.html” effectively providing a “short-hand” reference to the longer URL. This would also provide a central location for the public to reference when searching for specific Internet presentations. **CLOSED (Allan Darling).**

DACFO RESPONSE: The DACFO supports the OSO24 alternative proposal.

NATIONAL CENTERS FOR ENVIRONMENTAL PREDICTION

CENTRAL OPERATIONS

COMPUTING DEVELOPMENT BRANCH (NP14)

N-AWIPS - Follow-Up Items

F1. Add Auto-update Feature to NMAP

DISCUSSION: As of this writing, NMAP cannot auto-update the observational data fields that it displays. Supposedly, this capability is being developed, but at the moment no one seems to know when this functionality will be made available. Similarly, NMAP does not update national radar data.

RECOMMENDATION: NMAP displays should have the ability to automatically update observed data fields.

RESPONSE 1998: The development of the necessary capabilities to remove legacy systems and modernize NCEP Service Center products is the highest N-AWIPS priority. The current focus is on the development of drawing tools in NMAP so that the forecasters can draw their products. We recognize that the ability for NMAP to automatically update fields is an important requirement. We plan to address it in the future in coordination with other Service Center critical requirements.

Editor's Note: This work was completed March 26, 1999. **CLOSED (Mary Desjardins).**

F2. NMAP Enhancements

Over the past year (1997), there have been few upgrades in the initial suite of N-AWIPS applications NTRANS, NSAT, NSHARP, NWX, NAFOS. One exception has been the introduction of the NMAP application which can be used to incorporate model and observational data streams (satellite, RAOBS, and METAR at this writing).

While NMAP is a step in the right direction (i.e., forecasters can combine different data sources in one display), it is far from complete as it now stands. Many questions remain as to its real operational utility. The primary shortcoming of NMAP is that it still relies on user-unfriendly

restore files for the display of model data fields “on the fly,” and there is no option for selecting and saving user preferences.

Using restore files for viewing model data is problematic in that no user input or adaptability is allowed. NMAP needs to have an easy-to-understand user interface for changing GEMPAK attributes (such as line color, thickness and type), and parameters (e.g., temperature, wind and pressure) in model forecast and analysis fields. The GARP program, used by NWS field offices, apparently has this capability. This kind of functionality is also provided by PCGRIDDS (for model data only). If NMAP is to truly become a useful operational program, it will need to gain this ability.

RECOMMENDATION: Some kind of user file should be incorporated into NMAP to allow it to store user preferences. In addition to storing the preferences for model fields selected within the interface suggested above, the file could also hold information about satellite enhancements, station models and data paths.

RESPONSE 1998: As indicated in item number 2, the current focus of N-AWIPS development is to develop the critical product generation capabilities to remove the legacy systems. The requested NMAP improvements are not a critical product generation requirement. Nonetheless, we plan to make the requested improvements after we have met the critical product generation requirements.

Editor’s Note: The DACFO has withdrawn this recommendation based upon changed requirements at SPC. **CLOSED (Mary Desjardins).**

NATIONAL CENTERS FOR ENVIRONMENTAL PREDICTION

ENVIRONMENTAL MODELING CENTER (NP2)

Models/Guidance - New Item

1. Eta-10 Model Run for the Benefit of Western States

DISCUSSION: Due to the complex terrain in the Western US, there is a need to run the Eta-10 model at least once per day. This model has provided the required resolution and accuracy to pinpoint many major weather events. In particular, the Eta-10 model assisted the Oxnard office in providing more accurate forecasts for heavy rain, high wind, and a much improved aviation package.

RECOMMENDATION: Run the Eta-10 model once a day and provide output to field offices.

RESPONSE 1999: To extend our current 4-per day North American domain runs of the Eta-32 to 10 km resolutions will require from about 28 times the C-90 with the Phase II delivery of the Class VIII IBM SP, but keep in mind only about half is ever applied for our operations. The plan is getting down to 22 km/50 levels by April 2000 and then down to approximately Eta-14 soon after delivery of Phase II in late CY 2000. After learning how to get the maximum out of the Phase II system, implement the Eta-10 in November 2001. **Target - November 30, 2001 (Steve Lord).**

Models/Guidance - Follow-Up Item

F1. Develop MOS Guidance for Buoy Sites

Editor's Note: This item was listed under OM12 in 1997.

DISCUSSION: Wind guidance is already available for buoy sites, and this is very useful, but temperature and dew point guidance is also needed for marine forecasts of fog and, in northern waters, icing.

RECOMMENDATION: Develop MOS guidance of temperature and dew point for all buoy sites.

RESPONSE 1997: Dew point sensors on buoys and C-MAN stations have been experimental for several years. There has been some success with certain instruments and algorithms used to measure dew point in the marine environment. OM will be submitting a requirement to NDBC

to add dew point sensors to all stations as they are serviced. OM12 will work with TDL to determine the feasibility of producing the additional parameters in the MOS guidance.

FOLLOW-UP 1998: We are in the process of redesigning the coastal wind forecast system at selected buoy and C-MAN stations to include air temperature and, when available, dew point temperature. It will be a few years before the system will be in place, but be assured we are collecting data and will be doing some preliminary development this year. The new wind and temperature guidance should be available by Dec. 31, 2002. Dew point guidance will take longer because it is doubtful that all buoys and C-MAN stations will have the capability to measure dew point by 2002. Even if the sensors are there, it will take another 4 years to get enough data from each sensor to derive meaningful equations for the moisture variables.

FOLLOW-UP 1999: The 1998 response which included a plan for implementation of forecast guidance for winds and air temperature in FY 2002 and implementation of dew points in FY 2006 is still on track. We are still collecting the data to be used for the forecast equations.
Target - December 31, 2006 (Larry Burroughs).

NATIONAL CENTERS FOR ENVIRONMENTAL PREDICTION

AVIATION WEATHER CENTER (NP6)

Aviation - Follow-Up Item

F1. Amendments to Winds Aloft Forecasts

Editor's Note: This item was listed under OM12 in 1997.

DISCUSSION: According to WSOM D-24, NCEP provides wind and temperature aloft forecasts and nine WSFOs issue FD amendments to the products on a single station basis. When a WSFO issues an amendment, all of the original data are replaced with the single station amendment. When an FD request is made, the latest data should be provided but only amended data are displayed.

RECOMMENDATION: Have the WSFO amending the FD retransmit the entire product after amending any data.

OM12 RESPONSE 1997: Is the recommendation applicable to NWS or FAA systems? The procedures for the existing amendment procedures were established as coordinated with the FAA and in their system, an amendment is supposed to replace the old forecast. While communications should generally allow the increased traffic or complete retransmissions (of the WSFO forecasts or all 176), 4/day model outputs from NCEP would eliminate the need for WSFO amendments.

The Aviation Weather Center will work with the Federal Aviation Administration to provide the FD wind and temperature forecasts 4 times per day which will eliminate the amendment process by the nine WSFOs. Since the FDs are programmed with respect to their "for use" period and the length of optimum time of usage, systems in the FAA will need to be changed. This will take time and money.

There are work-arounds that might be employed, such as sending out the intermediate FD output as amendments or just output graphics for certain customers. Whatever is done will need to be coordinated closely.

Ultimately, however, the GRIB output should be provided and the FAA can then format the information for any needed application. This is in the planning stages.

NP6 FOLLOW-UP 1998: The AWC is completing the necessary coordination with the EMC and FAA that will result in the issuance of an FD wind and temperature product 4 times per day.

NP6 FOLLOW-UP 1999: WSOM Chapter D-24 has been completely rewritten by Fred Foss. OM currently has the chapter out for review and when the review is complete, notice will be given to customers about the upcoming change. Geoff Dimego has the 4-a-day winds program ready and winds will be produced from the MesoEta model. Dick Stone (OM12) has the action.

FOLLOW-UP DECEMBER 1999: The revised WSOM Chapter D-24, has been completed and concurrences from requisite NWS organizations were received before November 1999. However, issuance of FD winds 4-times a day, with no amendments is a change of requirements for aviation weather. We are still waiting FAA concurrence on the proposed chapter. Once FAA has concurred it will be forwarded for signature and issuance. There will be a 60 to 90 day period following issuance before the change is implemented to allow for user software changes. We have requested, but not received an update from FAA ARW-100 on the progress toward approval within FAA, so an implementation date cannot be given at this time. Upon implementation, NCEP will also assume responsibility for production and issuance of 4-a-day FD winds for Hawaii. **This will remain open for a few months with no specific target month/year for the reason stated in this update. (Dick Stone, OM12).**

END